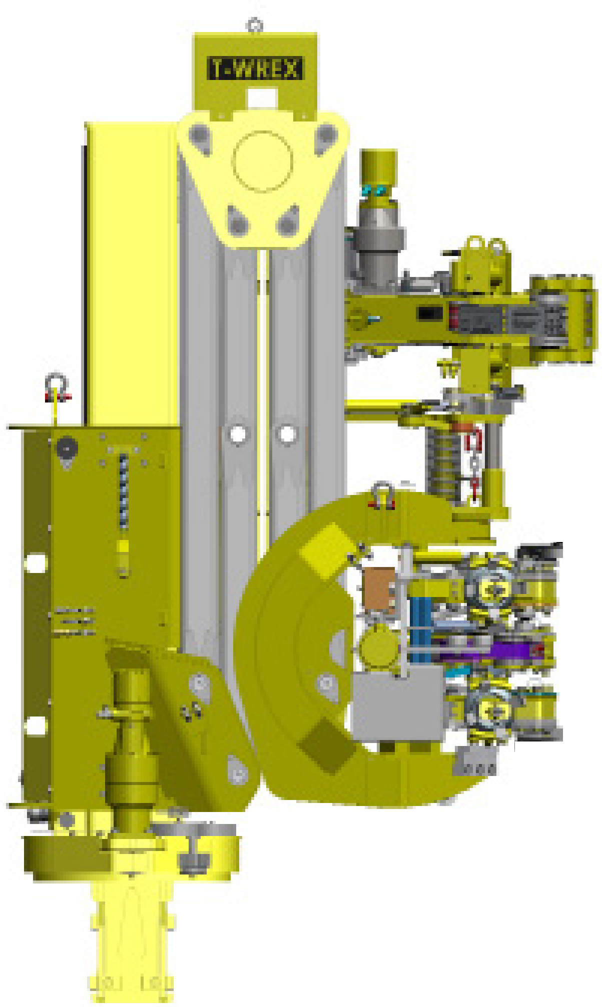



# T-WREX

## PARTS, DRAWINGS, SERVICE & OPERATION MANUAL

T-WREX JR. MODEL 51200 EXT JR

S/N 104 - 110

**HAWK INDUSTRIES INC.**
1245 EAST 23RD STREET
SIGNAL HILL, CA 90755
USA
PHONE: +1-562-424-0709
FAX: +1-562-490-9959
WWW.HAWKINDUSTRIES.COM

5/13

# JR. T-WREX

**51200** remote pneumatic pilot (51886 + 51882),
**+EXT JR** for 180” reach capabiltiy, 134” standard

JR. CAPABILITIES:

**Wrenches**: **3 1/2” - 8”** outside diameter
**Torque to**: **60,000 ft. lbs.**
**Break out: 80,000 ft. lbs.**
**Min. reach:**
**Max. reach: 134” (post center to well center)**
**Height travel: 38”**

**Spinner**: **2.875” - 8”** outside diameter
**Shoulders at 3000 ft./lbs on 5” pipe**

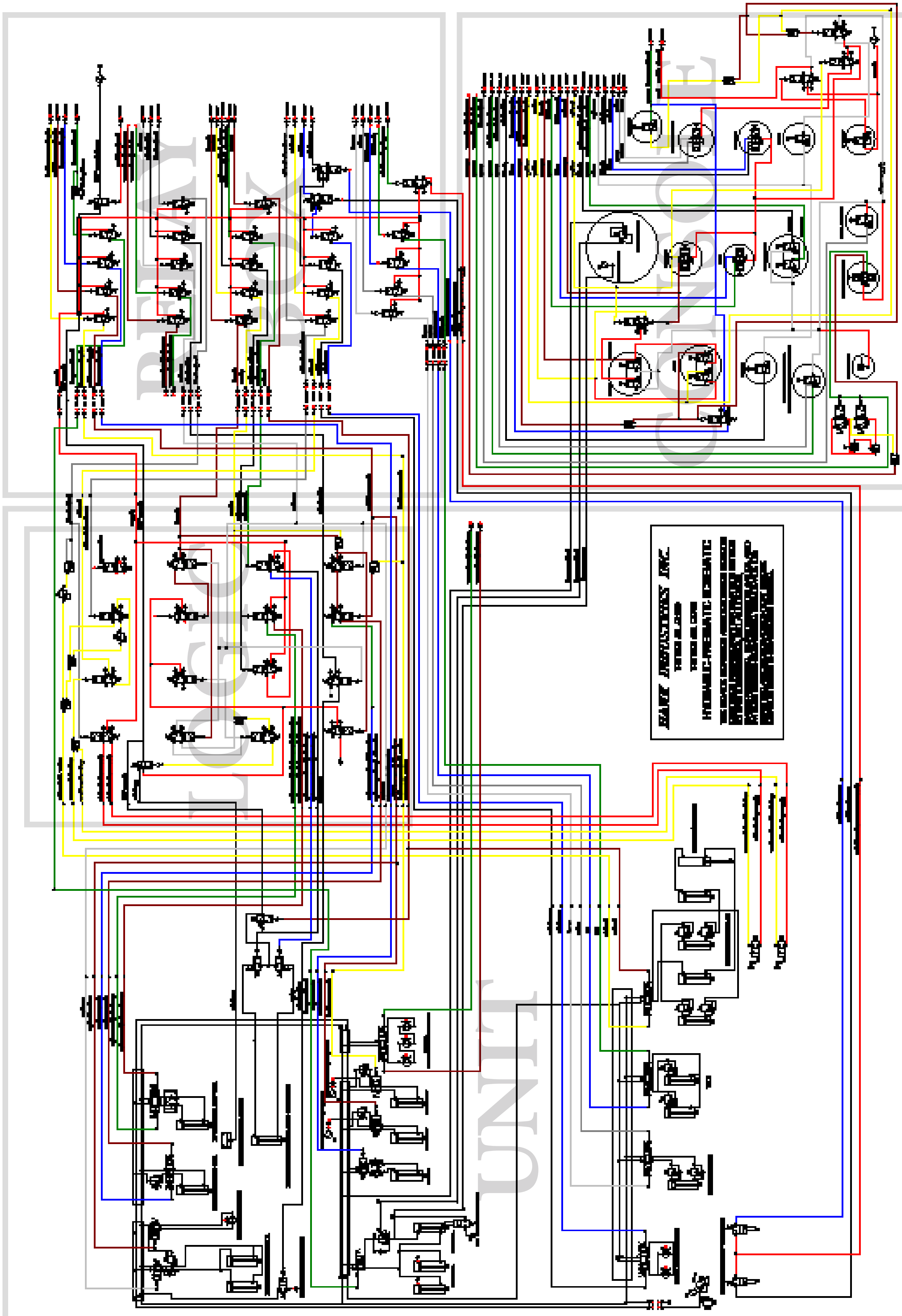
# TABLE OF CONTENTS



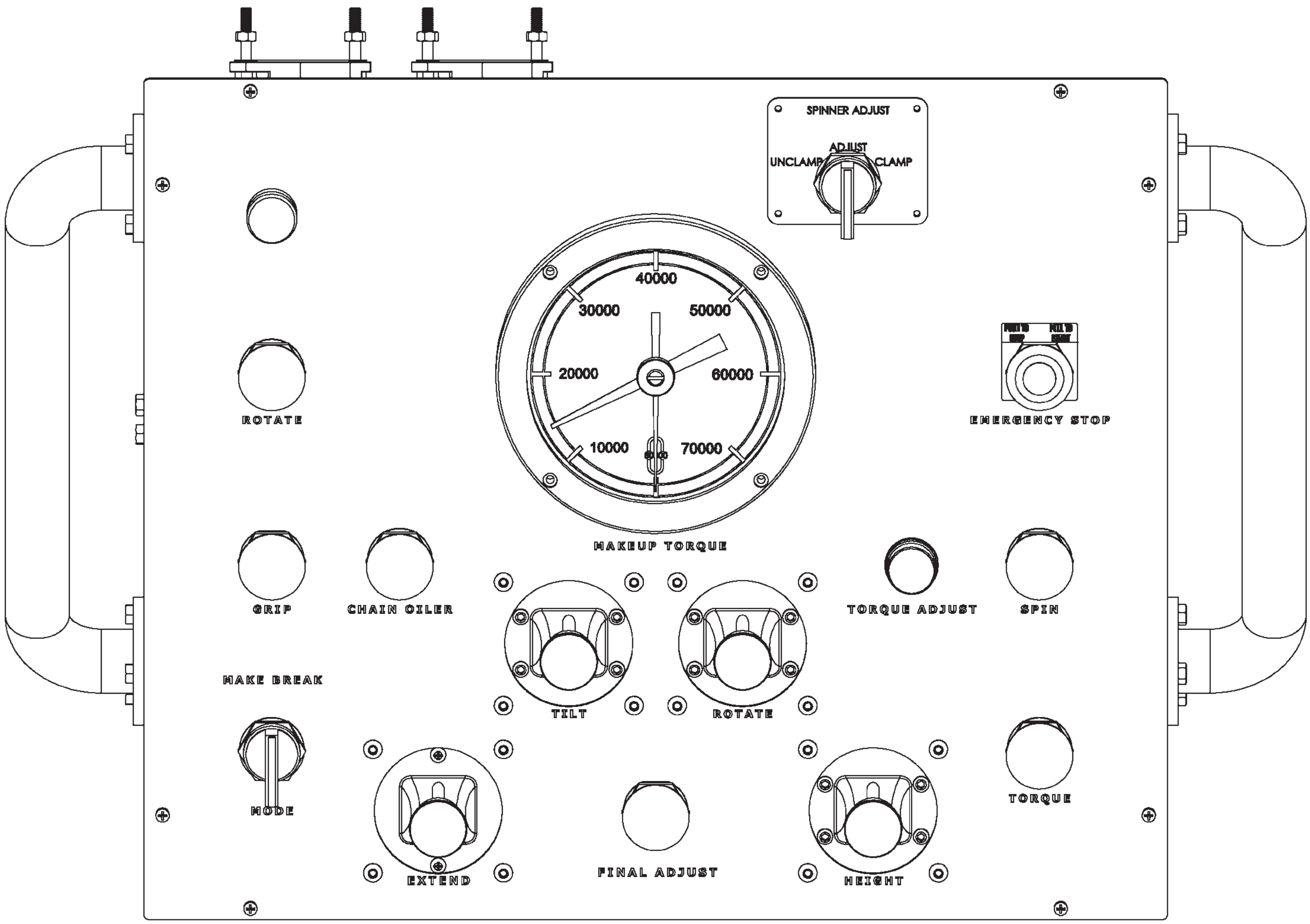
**NOTE:**
**ALL CONFIGURATIONS REQUIRE A HYDRUALIC POWER UNIT CAPABLE OF DELIVERING 30 GPM AT 3000 PSI CLOSED-CENTER**

Compressed Air: 100psi @ 10-20cfm for air piloted models

# T-WREX, AIR PILOTED CONTROL SCHEMATIC



# 51507 AIR PILOT SOURCE CONTROL CONSOLE




## Basic Operation:

**1. Set wrenches (pages 75-76)**
**2. Set spinner (page 78)**
**3. Set a rotate and an extend limit (page 77)**
**4. Height adjust for make or break (refer to previous page)**
**5. Hit GRIP**
**6.**

**For Make:**

**hit SPIN until shouldered, release**
**hit TORQUE until torqued, release**
**UN-GRIP**

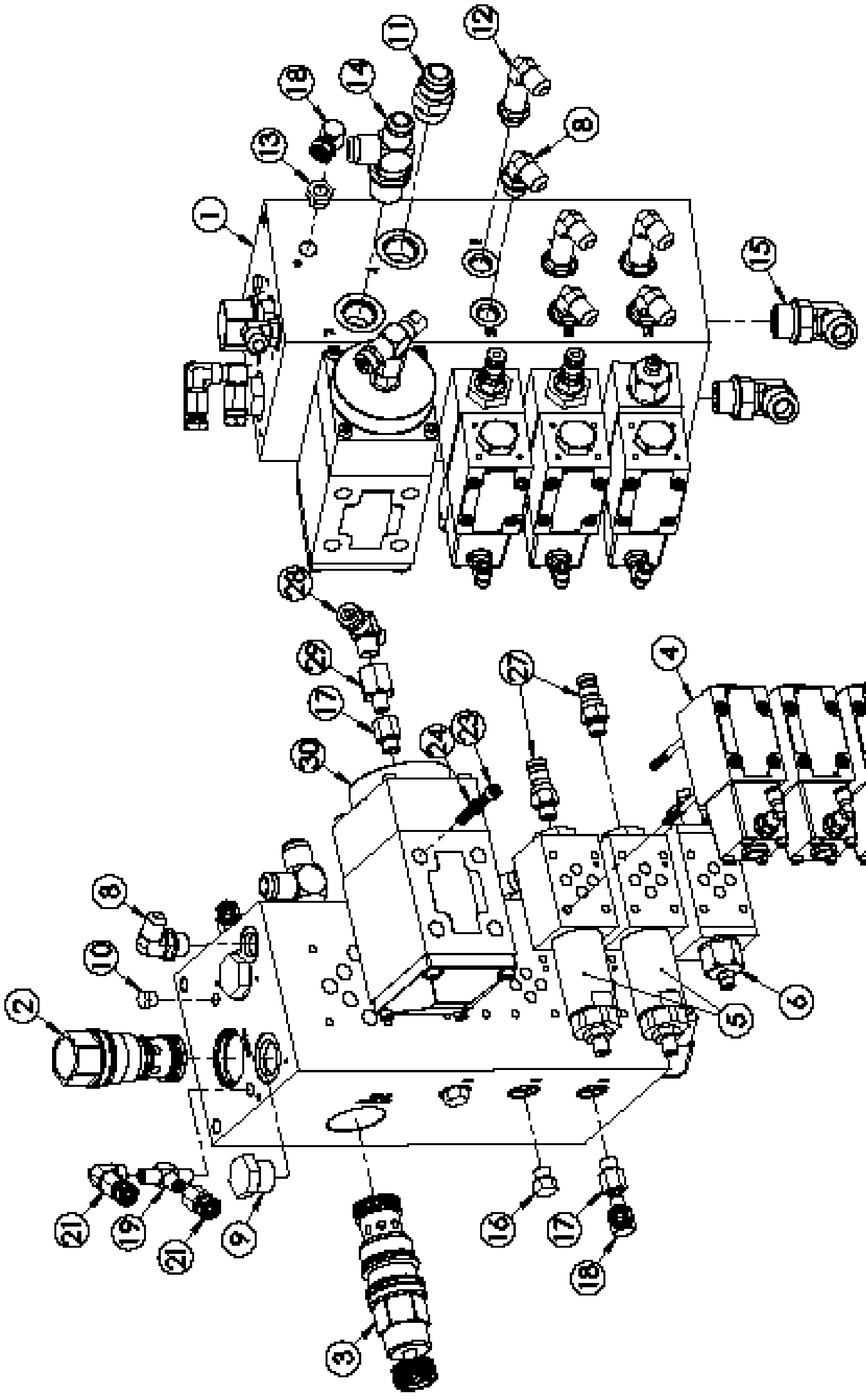
**For Break:**

**hit TORQUE until joint is broken, release**
**hit SPIN until done, release**
**UN-GRIP**

**7. Retract unit off target, continue drilling operation**

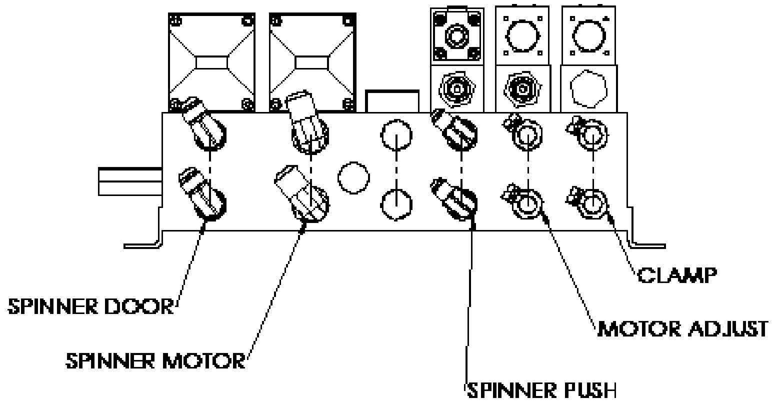
51886
TWREX COMMON

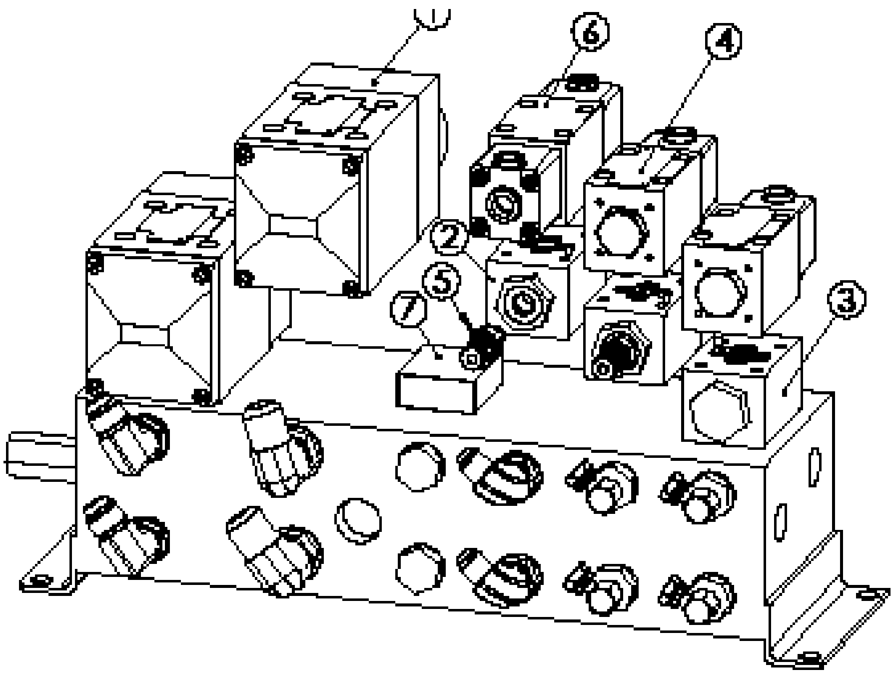
# 51627
# MAIN MANIFOLD ASSEMBLY



# 51627
# MAIN MANIFOLD ASSEMBLY

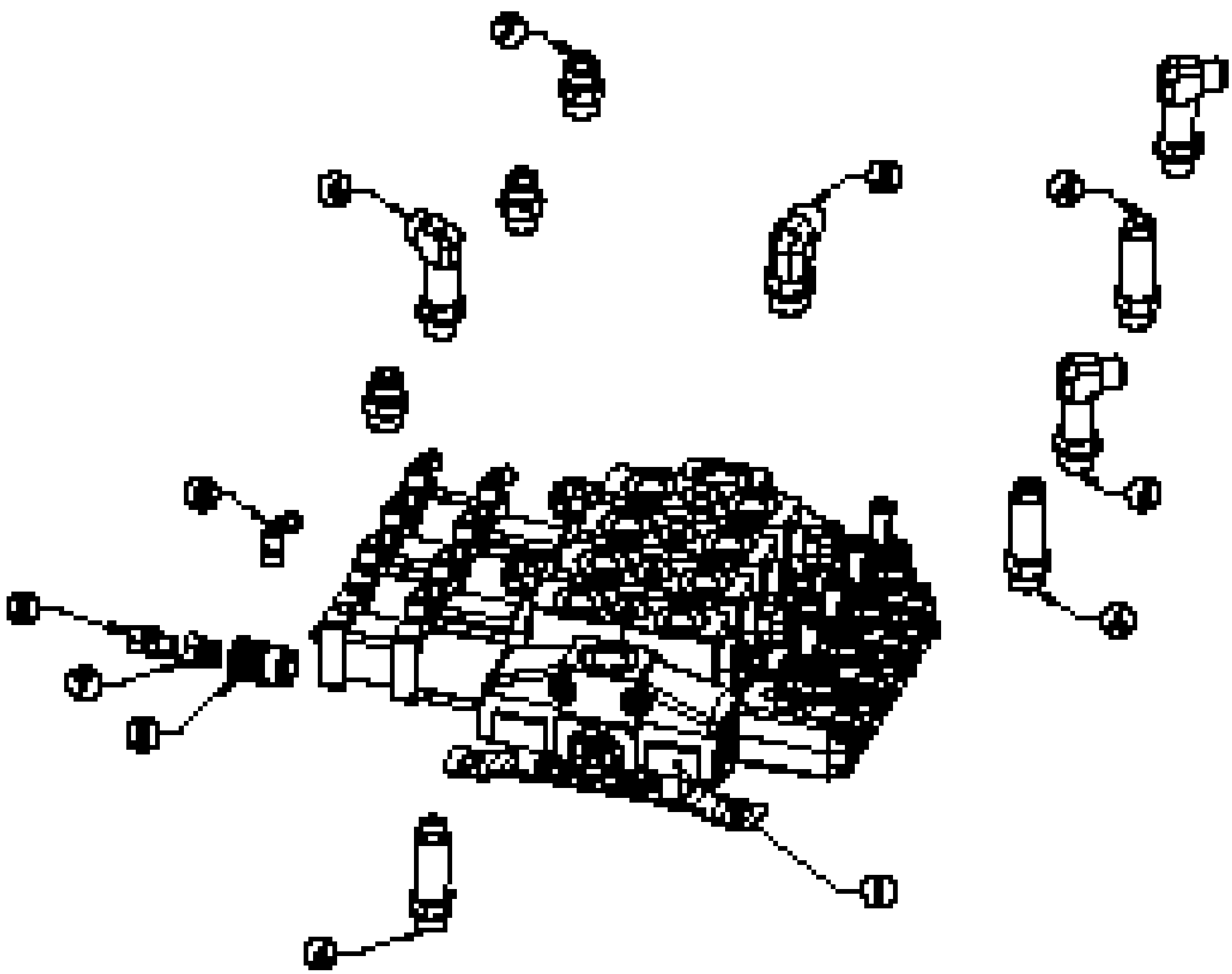
| | | | |
|---|---|---|---|
| 30 | T172 | TORQUE VALVE, D05 | 1 |
| 29 | 5405-2-4 | -2MNPT X -4FNPT REDUCER | 1 |
| 28 | T161 | QUICK EXHAUST | 1 |
| 27 | H71 | 1/4" QUICK DISCONNECT MALE | 2 |
| 26 | 809475-375 | #10-24 X 3.75 LG. SHCS | 12 |
| 25 | 809476 | #10 LOCK WASHER | 12 |
| 24 | 810588 | 1/4" LOCK WASHER, HI COLLAR | 4 |
| 23 | 808193 | 1/4"-20 x 1.75 LG. SOC. HD. CAP SCREW | 4 |
| 22 | A46 | -2MNPT X 5/32" PTC ELBOW | 3 |
| 21 | 2046-2-2S | -2FNPT X -2FNPT STR. SWIVEL | 2 |
| 20 | 2089-2-2S | -2MNPT X -2FNPT 90 DEG ELBOW | 1 |
| 19 | 2257-2-2S | -2MNPT T FITTING | 1 |
| 18 | 2047-2-2S | -2MNPT X -2FNPT 90 DEG. SWIVEL | 2 |
| 17 | 2216-2-4S | -4FNPT X -4MORB STR. ADAPTOR | 2 |
| 16 | 900598-4S | -4MORB PLUG | 2 |
| 15 | 2062-10-10S | -10MORB X -10MJIC FITTING 90 DEG. | 2 |
| 14 | 203005-10-8S | -10MORB X 2X -8MJIC T FITTING | 1 |
| 13 | 2081-4-2S | -4MNPT X -2FNPT HEX BUSHING HP | 1 |
| 12 | 206209-6-6S | -6MORB X -6MJIC FITTING 90 DEG. EXT. | 3 |
| 11 | 202702-10-10S | -10MORB X -10MJIC STR. ADAPTOR | 1 |
| 10 | 2082-2S | -2MNPT PLUG | 1 |
| 9 | 900598-10S | -10MORB PLUG | 2 |
| 8 | 2062-6-6S | -6MORB X -6MJIC FITTING 90 DEG. | 4 |
| 6 | H6747 | FLOW CONTROL VALVE, D03 | 1 |
| 5 | H6P | PRESSURE CONTROL VALVE, D03 | 2 |
| 4 | 369 | DIRECTIONAL VALVE, D03 | 3 |
| 3 | J55A | PRESSURE REDUCING VALVE, CARTRIDGE | 1 |
| 2 | J55B | CHECK VALVE, CARTRIDGE | 1 |
| 1 | 5250-0527 | MAIN MANIFOLD | 1 |
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |




| ITEM NO. | PART NUMBER | DESCRIPTION | Default/ QTY. |
|---|---|---|---|
| 1 | 856 | DIRECTIONAL VALVE | 2 |
| 2 | H6P | PRESSURE CONTROL VALVE, D03 | 2 |
| 3 | H7 | PILOT CHECK SANDWICH | 1 |
| 4 | 369 | DIRECTIONAL VALVE, D03 | 2 |
| 5 | H71 | 1/4" QUICK DISCONNECT MALE | 2 |
| 6 | 368 | DIRECTIONAL VALVE, D03 | 1 |
| 7 | AD03CCP | PLATE, BLOCKOFF | 1 |
| 8 | 2062-8-8S | -8MORB X -8MJIC FITTING 90 DEG. | 2 |
| 9 | 2062-10-10S | -10MORB X -10MJIC FITTING 90 DEG. | 2 |
| 10 | 900598-8S | -8MORB PLUG | 2 |
| 11 | 2047-2-2S | -2MNPT X -2FNPT 90 DEG. SWIVEL | 4 |
| 12 | 900598-8S | -8MORB -2FNPT | 4 |
| 13 | 2062-8-6S | -8MORB X -6MJIC FITTING 90 | 2 |

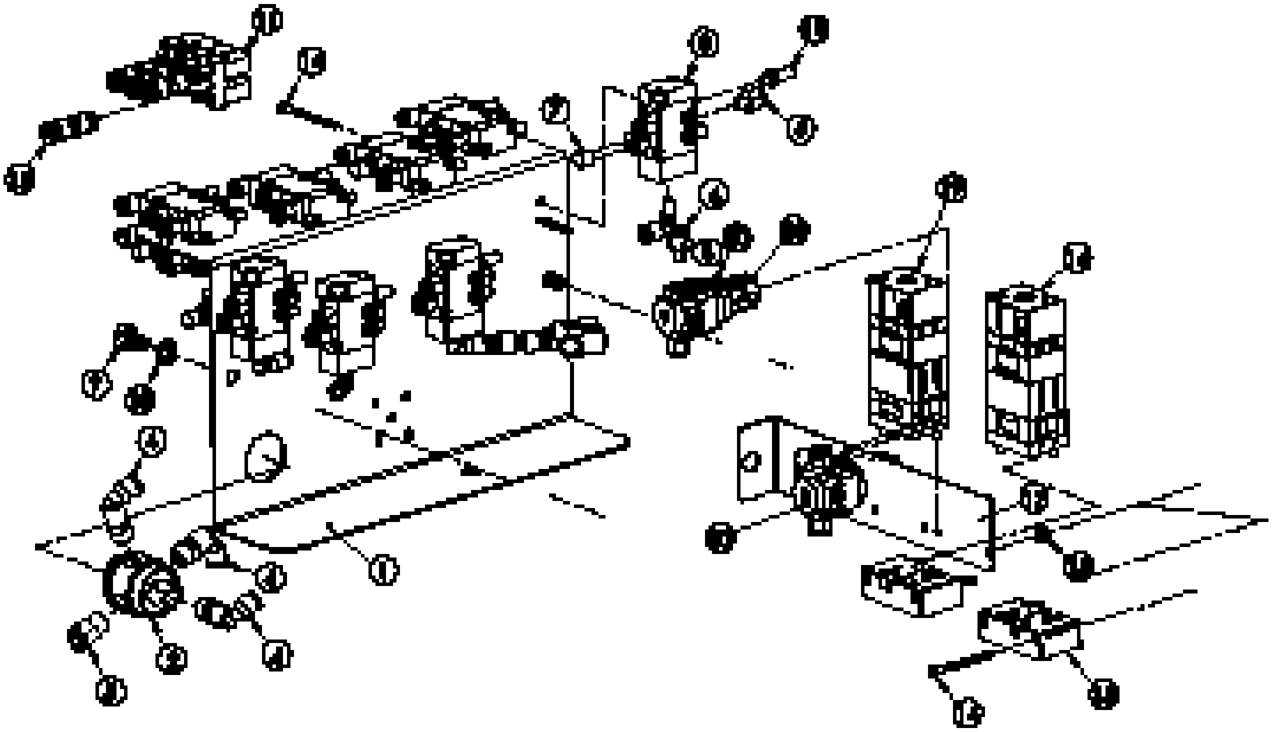
# 51625
# SUPPLY VALVE ASSEMBLY



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | [illegible] | SUPPLY VALVE | 1 |
| 2 | [illegible] | HEX PLUG, MODIFIED | 1 |
| 3 | [illegible] | [illegible] | 2 |
| 4 | [illegible] | [illegible] | 2 |
| 5 | [illegible] | [illegible] | 1 |
| 6 | [illegible] | [illegible] | 2 |
| 7 | [illegible] | [illegible] | 2 |
| 8 | [illegible] | [illegible] | 1 |
| 9 | [illegible] | [illegible] | 1 |

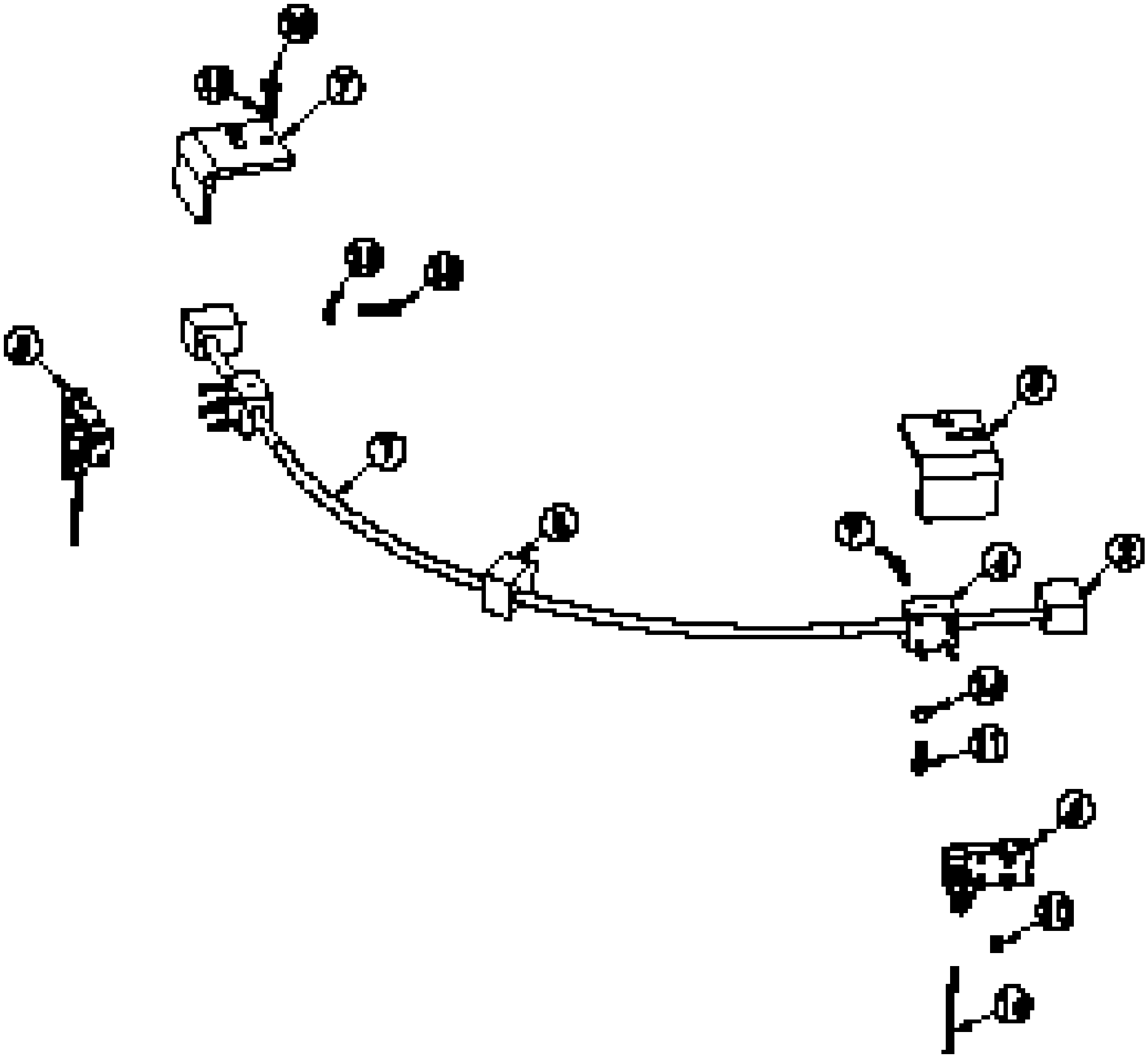
51482

# LOGIC PANEL ASSEMBLY



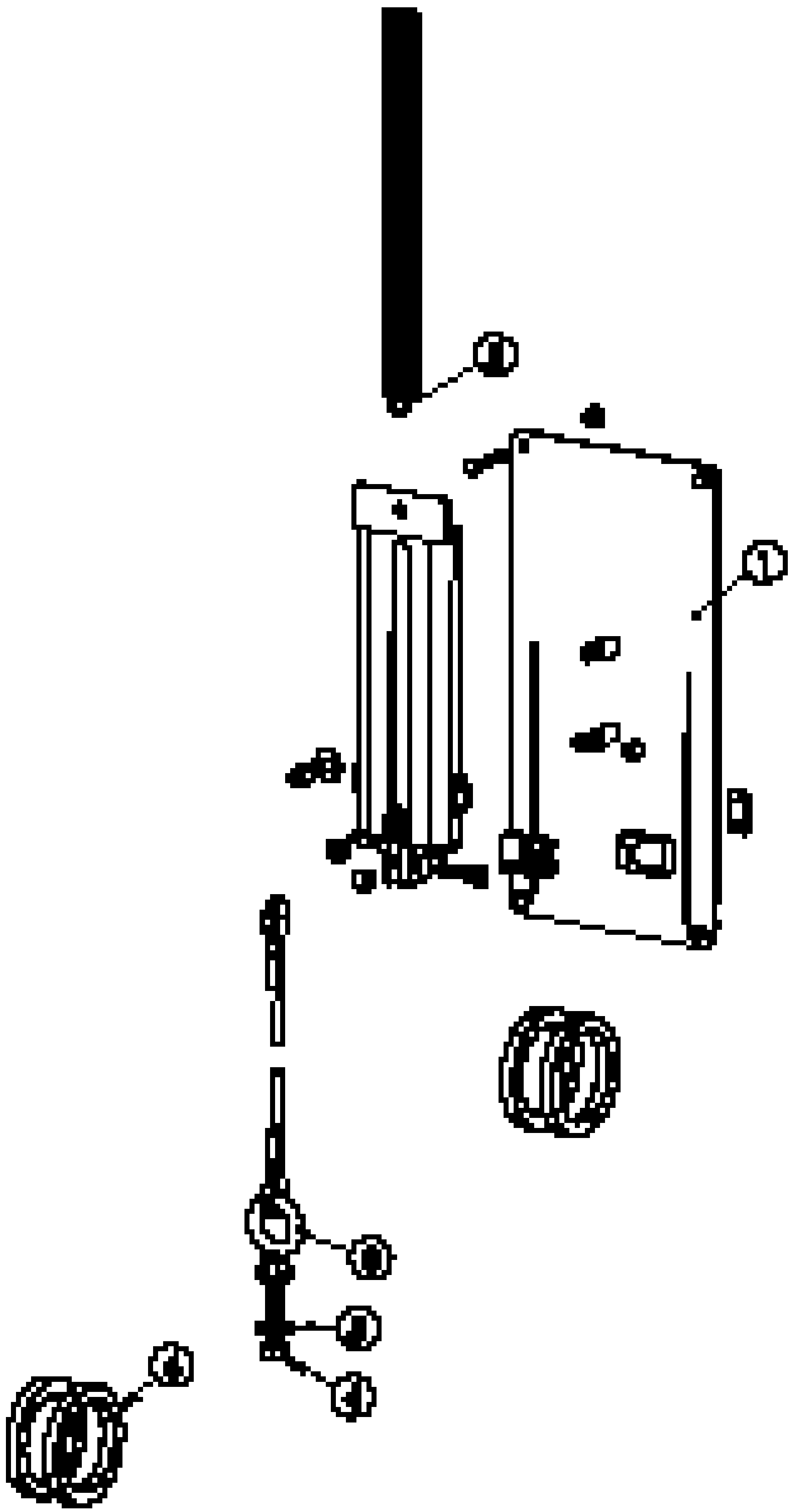
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| [illegible] | [illegible] | [illegible] | [illegible] |

# 51440
# ROTATION LIMIT ASSEMBLY



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | [illegible] | ROT. LIMIT ROD | 1 |
| 2 | [illegible] | ROT. LIMIT END BLOCK | 2 |
| 3 | [illegible] | ROT. LIMIT CENTER BLOCK | 1 |
| 4 | [illegible] | ROT. LIMIT SWITCH BLOCK | 2 |
| 5 | [illegible] | ROTATION LIMIT SWITCH, LEFT | 1 |
| 6 | [illegible] | ROTATION LIMIT SWITCH, RIGHT | 1 |
| 7 | [illegible] | LEFT ROT. LIMIT SWITCH COVER | 1 |
| 8 | [illegible] | RIGHT ROT. LIMIT SWITCH COVER | 1 |
| 9 | [illegible] | [illegible] PAN HEAD SCREW | [illegible] |
| 10 | [illegible] | [illegible] NYLA LOCKNUT | [illegible] |
| 11 | [illegible] | 1/4"-20 X [illegible] LG. HEX BOLT | 2 |
| 12 | [illegible] | 1/4" LOCK WASHER | 4 |
| 13 | [illegible] | 1/4"-20 X [illegible] LG. HEX BOLT | 2 |
| 14 | [illegible] | 1/4"-20 HEX NUT | 2 |
| 15 | [illegible] | 1/4"-20 X [illegible] LG. HEX BOLT | [illegible] |
| 16 | [illegible] | LEVER- ROTATION LIMIT SWITCH | 2 |

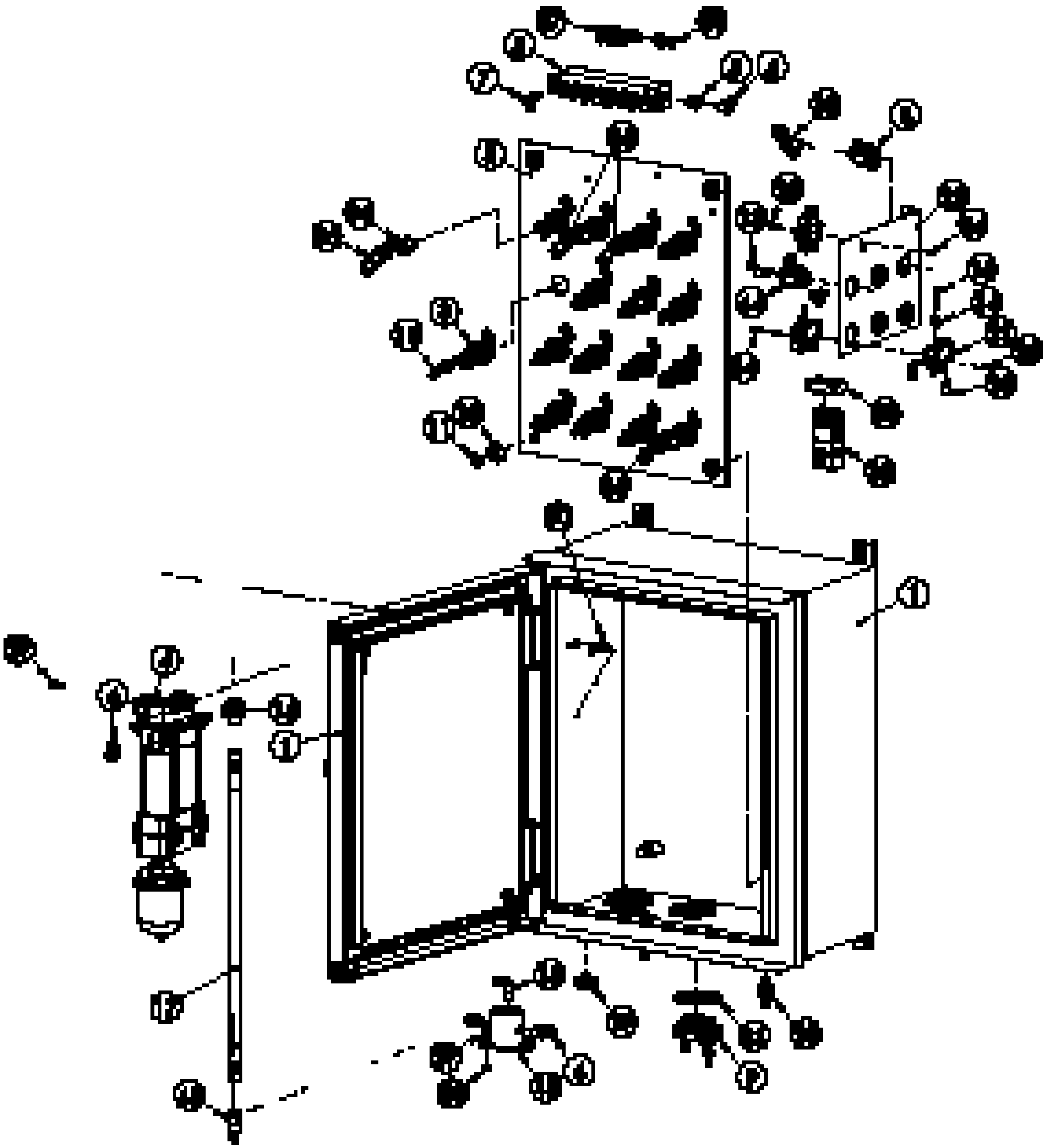
# 51800
# CABLE SENSOR



# 51800L
# CABLE SENSOR

| [illegible] | [illegible] | [illegible] | [illegible] |
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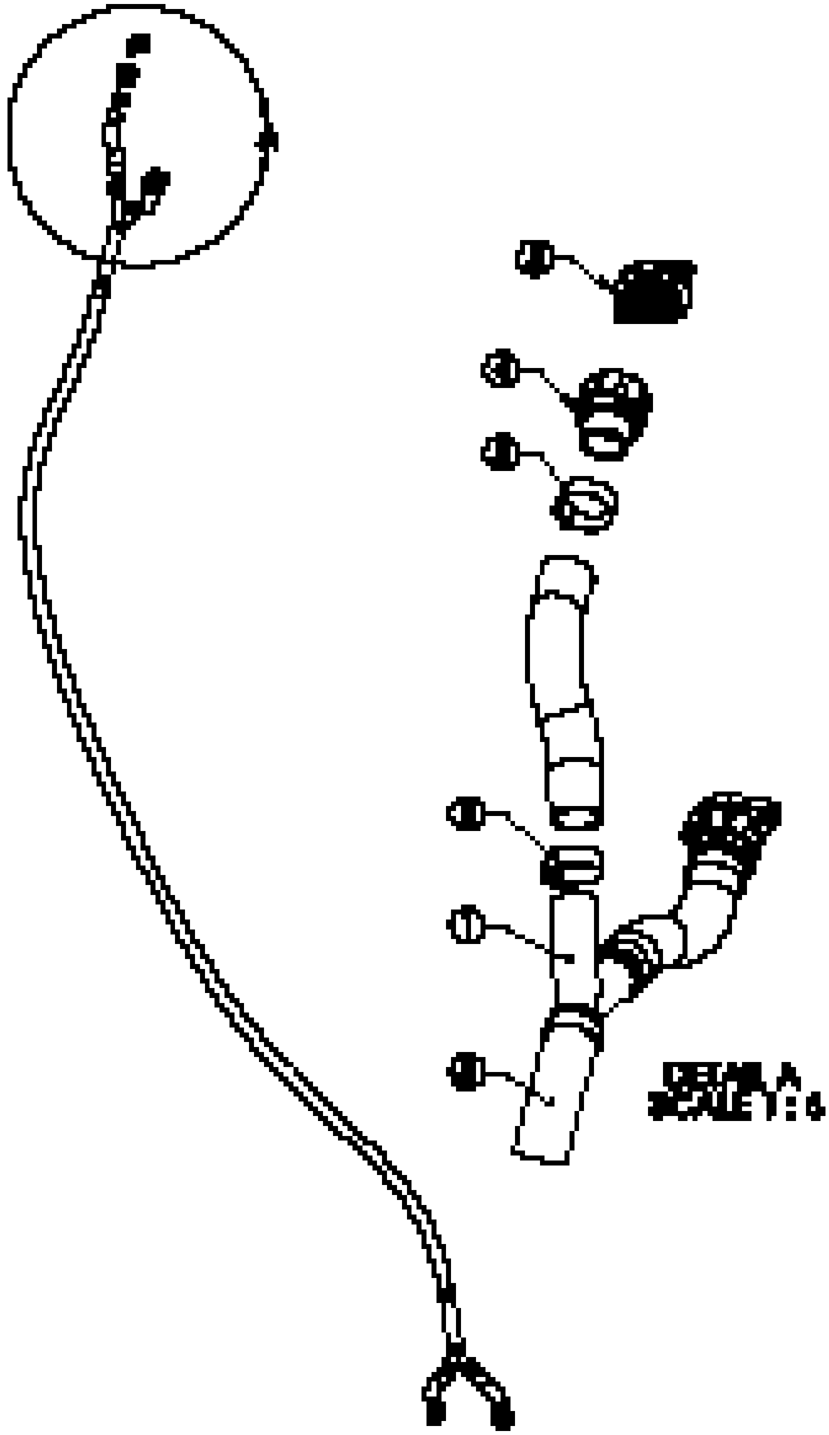
# 51480
# RELAY BOX ASSEMBLY



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T168

50 FOOT CONNECTOR

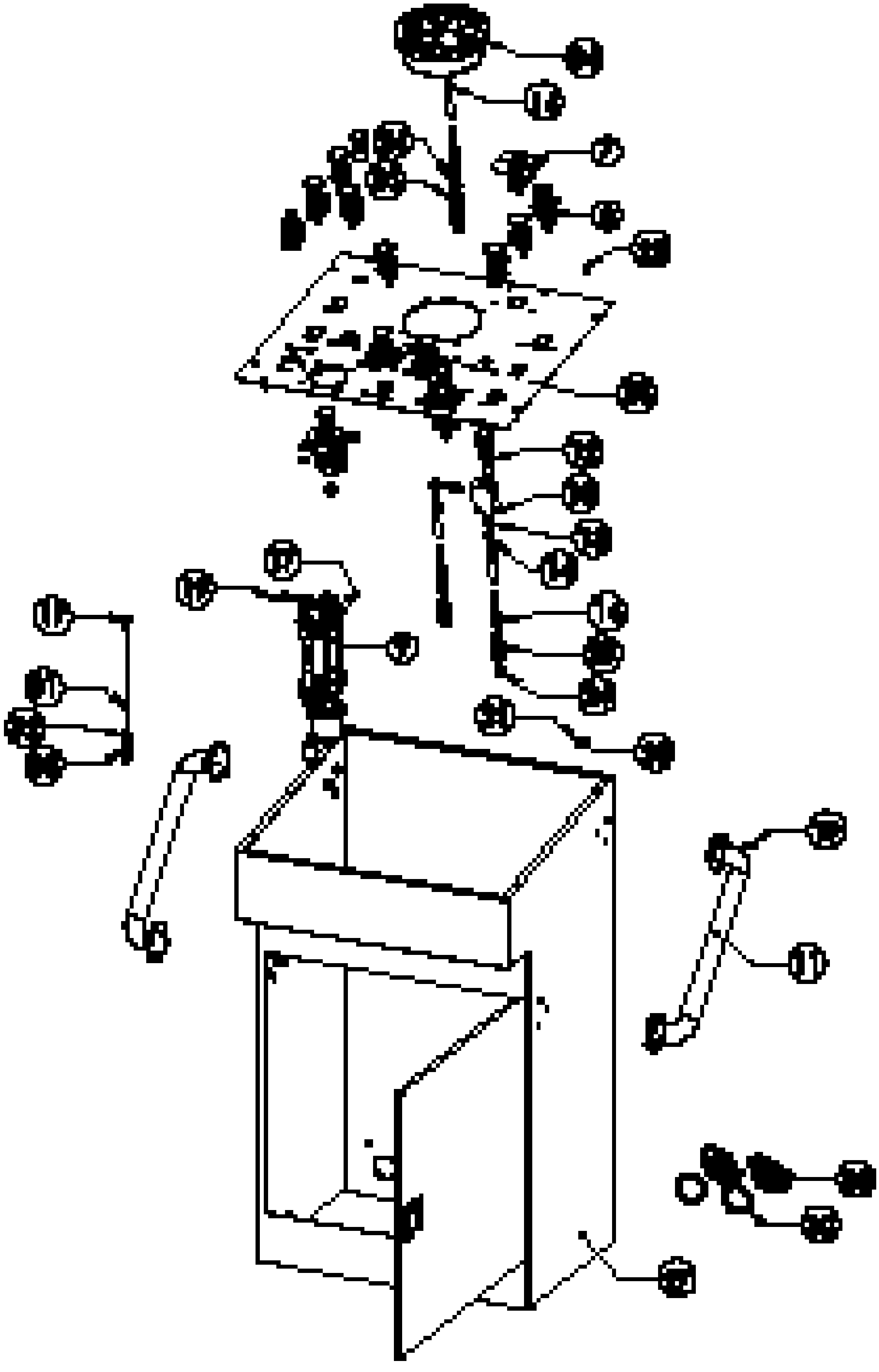



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | [illegible] | CONDUIT SPLIT | 2 |
| 2 | [illegible] | HOSE CLAMP | 10 |
| 3 | [illegible] | CONTROL CONDUIT | 2 |
| 4 | T16[illegible] | 1.50 STRAIGHT CONDUIT CONNECTOR | 4 |
| 5 | T16[illegible] | LOWER CONNECTOR, MULTIFLEX 14 PORT | 4 |

NOTES:

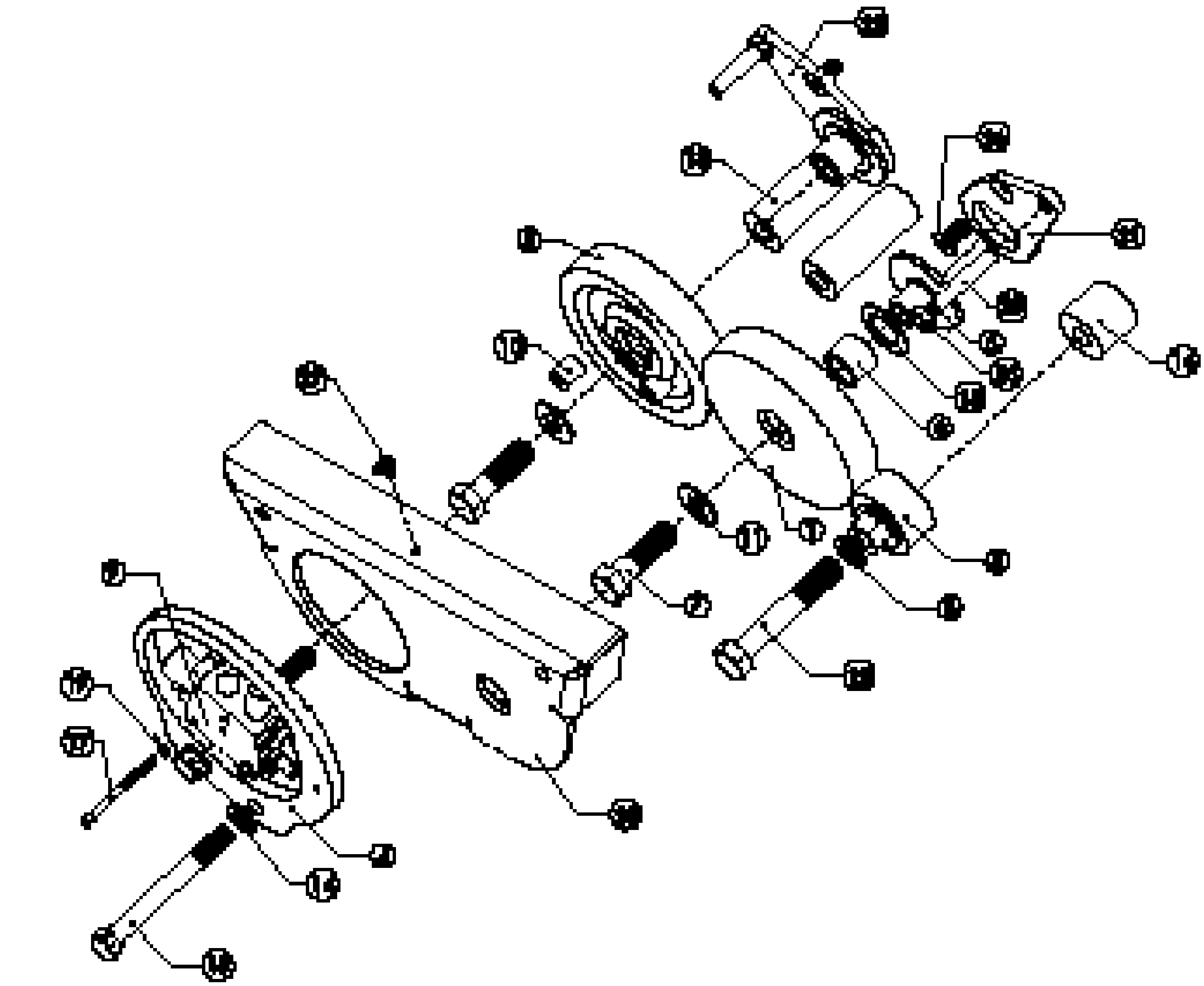
51507

CONSOLE ASSEMBLY

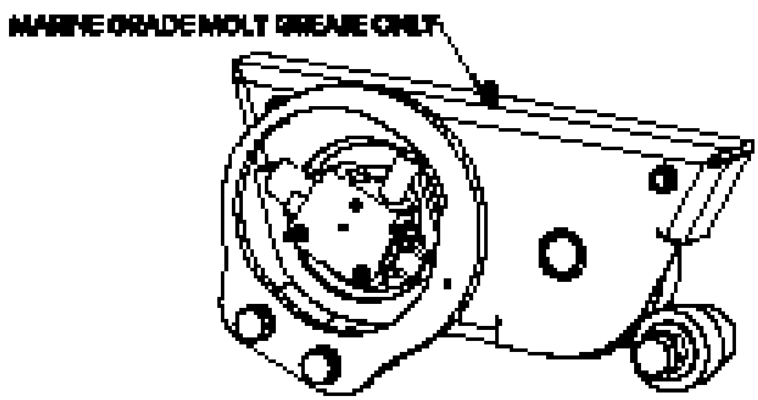


# 51507
# CONSOLE ASSEMBLY

| [illegible] | [illegible] | [illegible] | [illegible] |
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COAT ALL GEARS AND HUBS IN MARINE GRADE MOLT GREASE (9450K4)



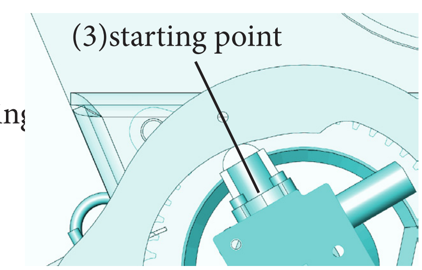
# 51141
# SYNCHRONIZATION ASSEMBLY

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
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# 51141 SYNCRONIZATION ASSEMBLY ADJUSTMENT

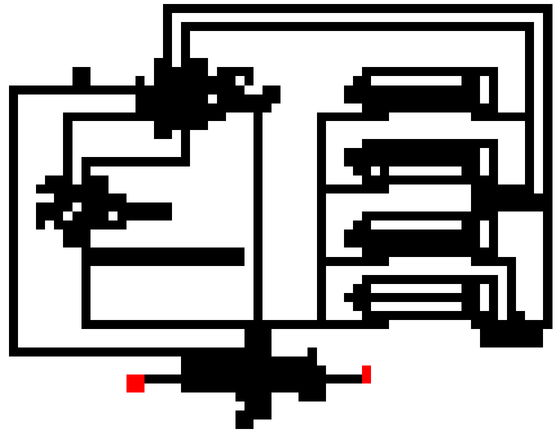
T-WREX's reach assembly consists of front and rear arms that require syncronization. To achieve syncronization front to rear, front and rear hydraulic cylinders must receive an equal volume of hydraulic oil. 51141 is a continously correcting mechanical-input hdyraulic flow divider.

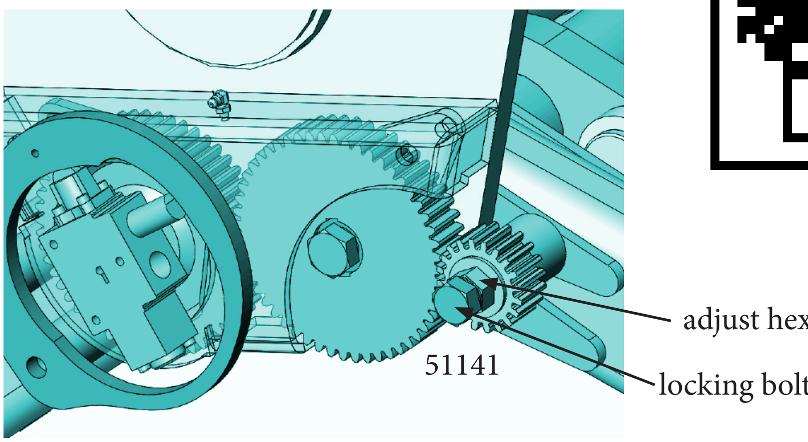
**(1)**Extend unit fully.
**(2)**Loosen locking bolt, then tighten snug.
**(3)**Use 1 1/8" wrench to adjust T170 to starting point on cam.
**(4)**Tighten locking bolt enough to keep driving gear from rotating during extend/retract operation.



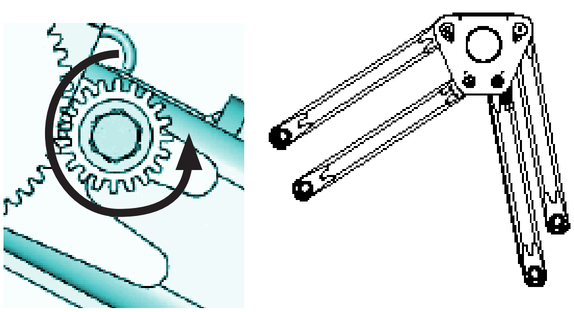

**(5)**Retract unit 3-4 feet.
**(6)**Extend unit fully while observing which arm extends last.

# 51141 SYNCRONIZATION ASSEMBLY ADJUSTMENT

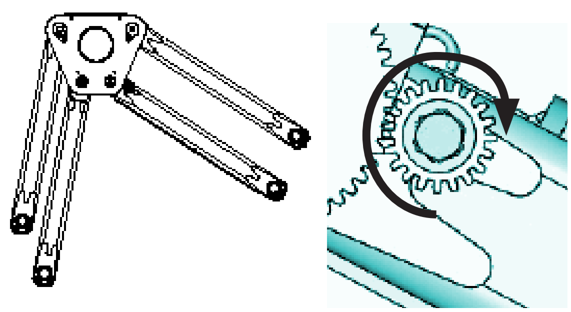





Either back or front arms will extend last.  Rotate adjust hex clockwise or counterclockwise accordingly.



rear arm extends before front arm,
adjust hex counter clockwise to increase flow to front/reduce to rear.



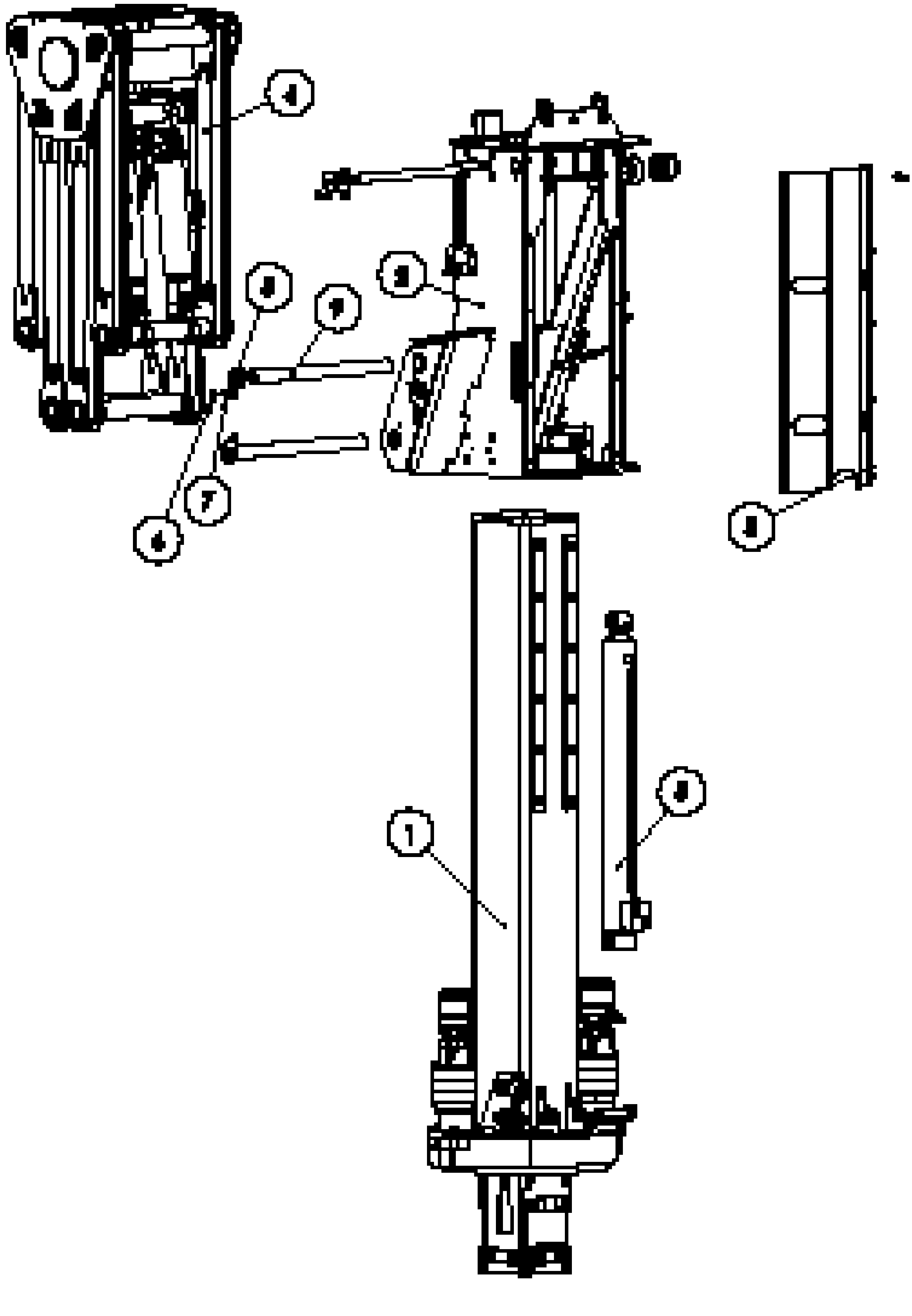
front arm extends fully before rear arm,
adjust hex  clockwise to increase flow to rear/reduce to front.

Repeat setps 5 and 6 after each adjustment.

The closer the arms get to syncronization, micro adjustments are required.
Tighten lockbolt and tap adjusting wrench with deadblow hammer to make small adjustments.

Adjustment is complete when both front and back arms extend fully at the same time.

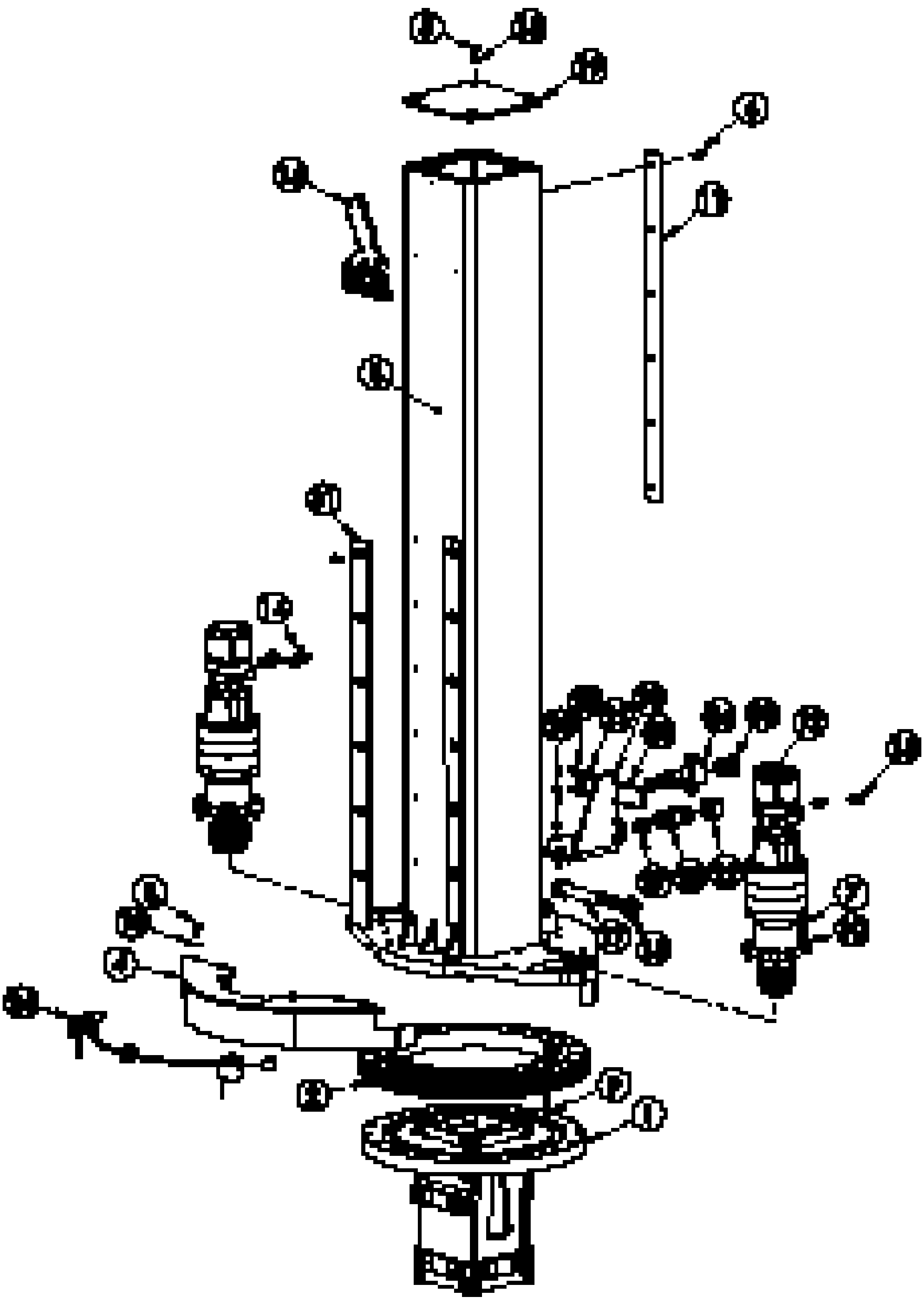
# 51888L
# C-HEAD TRAVEL ASSEMBLY



# 51888
# C-HEAD TRAVEL ASSEMBLY

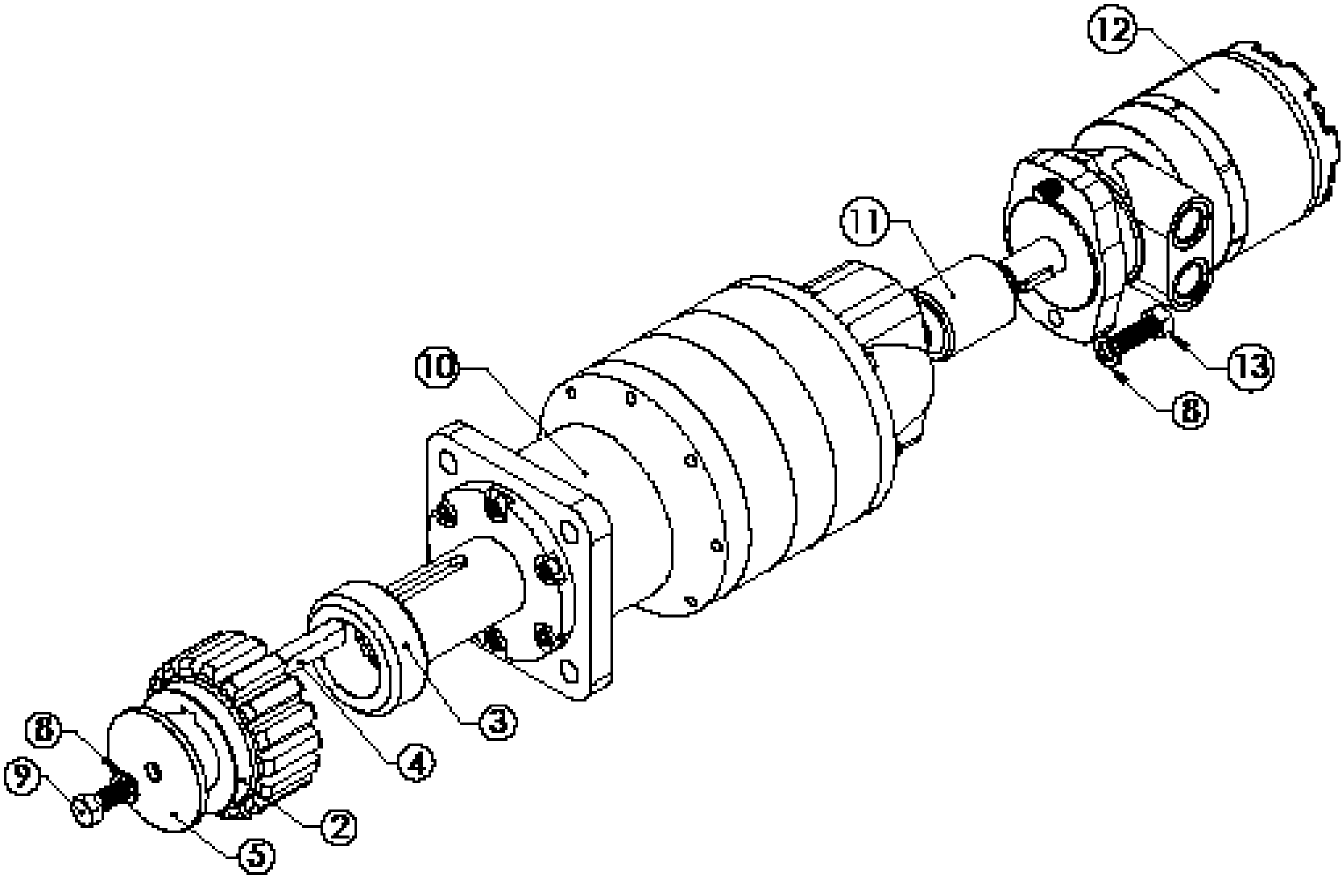
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | [illegible] | ASSEMBLY, MAIN SUPPORT | 1 |
| 2 | [illegible] | ASSEMBLY, TROLLEY | 1 |
| 3 | [illegible] | CYLINDER, MAIN LIFT | 1 |
| 4 | [illegible] | ASSEMBLY, EXTENSION LINKAGE | 1 |
| 5 | [illegible] | [illegible] | 4 |
| 6 | [illegible] | 1/2"-13 X 1.50 LG. HEX BOLT GRD 5 | 4 |
| 7 | [illegible] | 1/2" LOCK WASHER | 4 |
| 8 | [illegible] | BEARING, MED. LINK ASSY | 4 |
| 9 | [illegible] | [illegible] | 2 |

# 51210
# MAIN SUPPORT ASSEMBLY



# 51210
# MAIN SUPPORT ASSEMBLY

# 51235
# ROTATION MOTOR

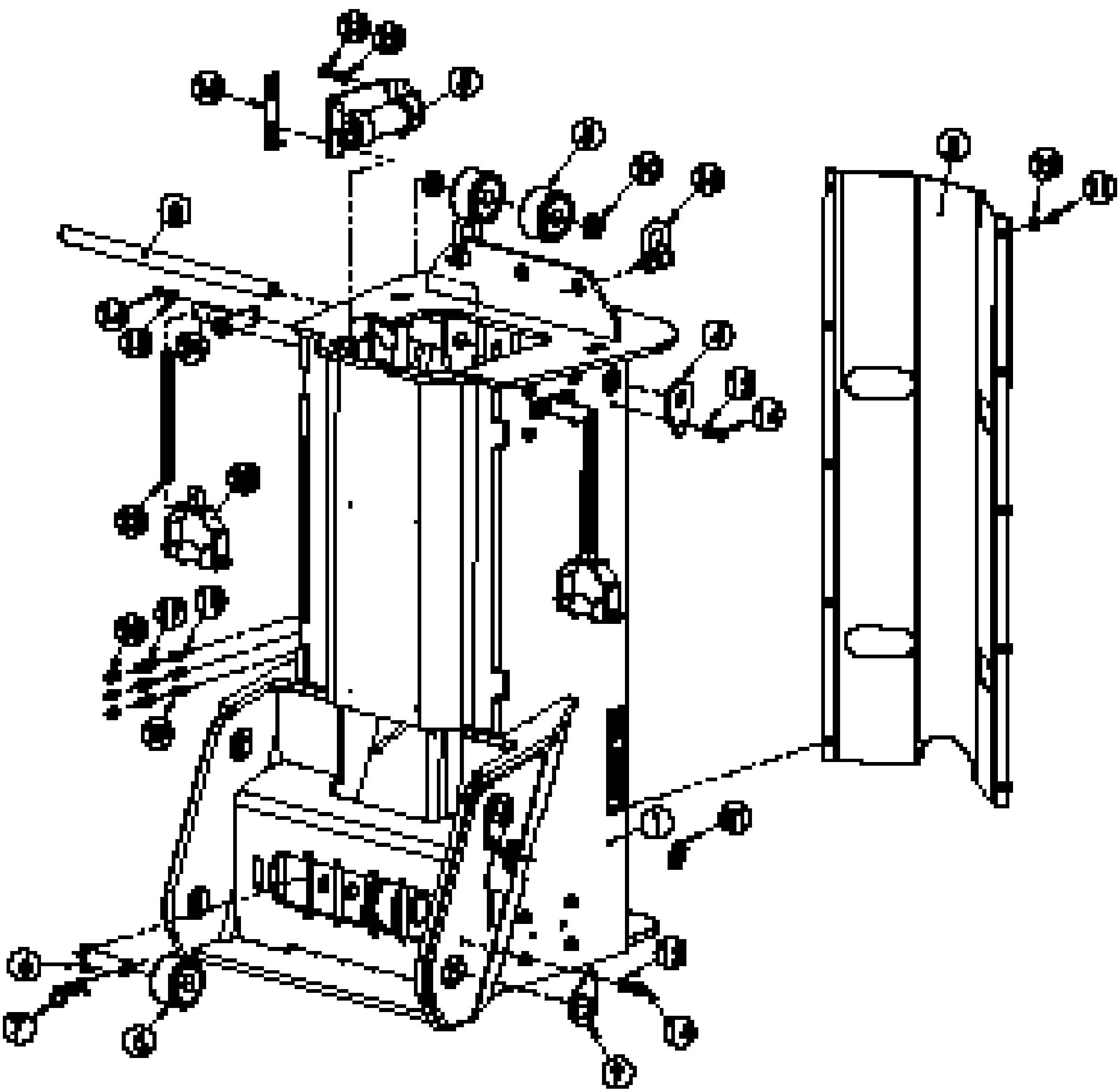



| 13 | 806268 | 1/2" -13 X 1.50 LG. HEX BOLT GRD.9 | 2 |
|---|---|---|---|
| 12 | T100 | MOTOR, HYDRAULIC | 1 |
| 11 | 16D | SUN GEAR | 1 |
| 10 | 51216 | REDUCER, GEAR | 1 |
| 9 | 806374 | 1/2" -20 X 1.50 LG. HEX BOLT GRD.8 | 1 |
| 8 | 810703 | 1/2" LOCK WASHER | 3 |
| 5 | 51217 | WASHER, GEAR SUPPORT | 1 |
| 4 | 51218 | JR GEAR KEY | 1 |
| 3 | 51219 | SPACER, GEAR | 1 |
| 2 | 51221 | GEAR, PINION, JR. | 1 |
| ITEM NO | PART NUMBER | DESCRIPTION | QTY |

NOTES:

51211

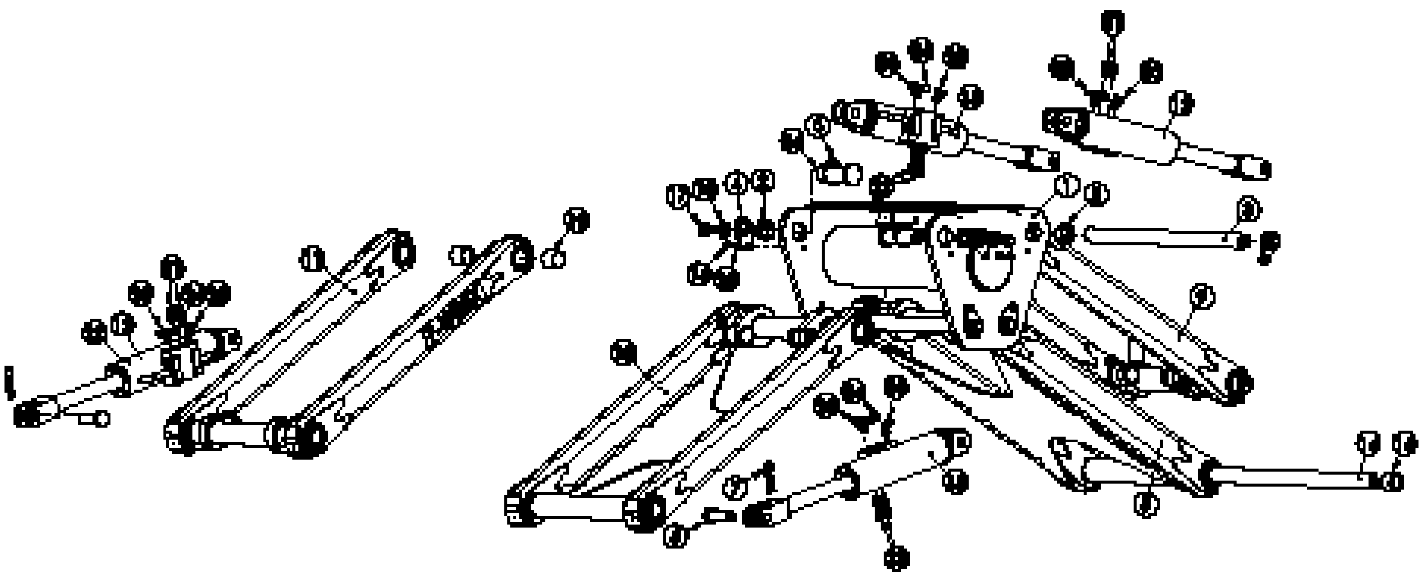
TROLLEY ASSEMBLY



# 51211
# TROLLEY ASSEMBLY

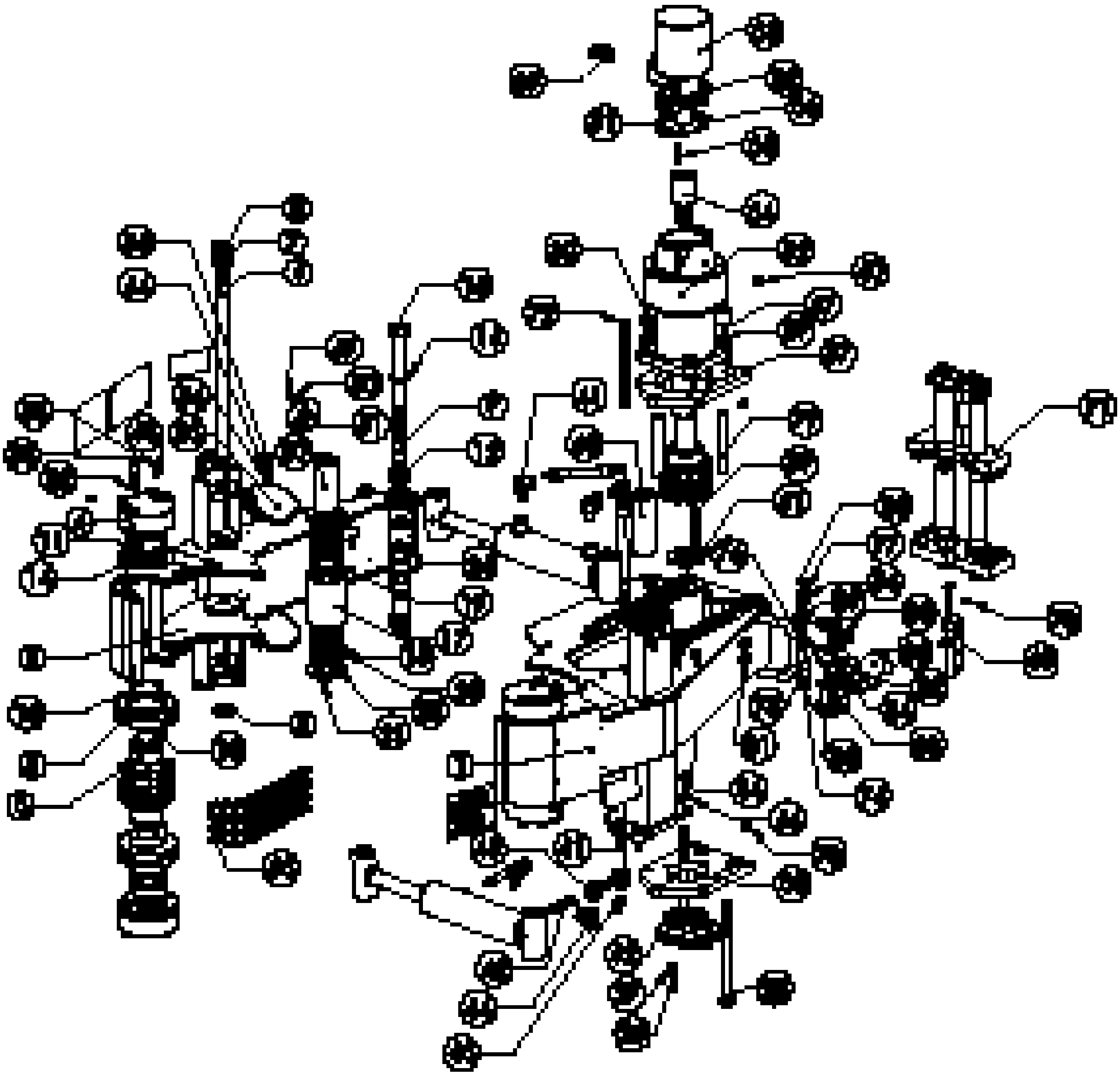
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# 51212
# EXTEND/RETRACT ASSEMBLY

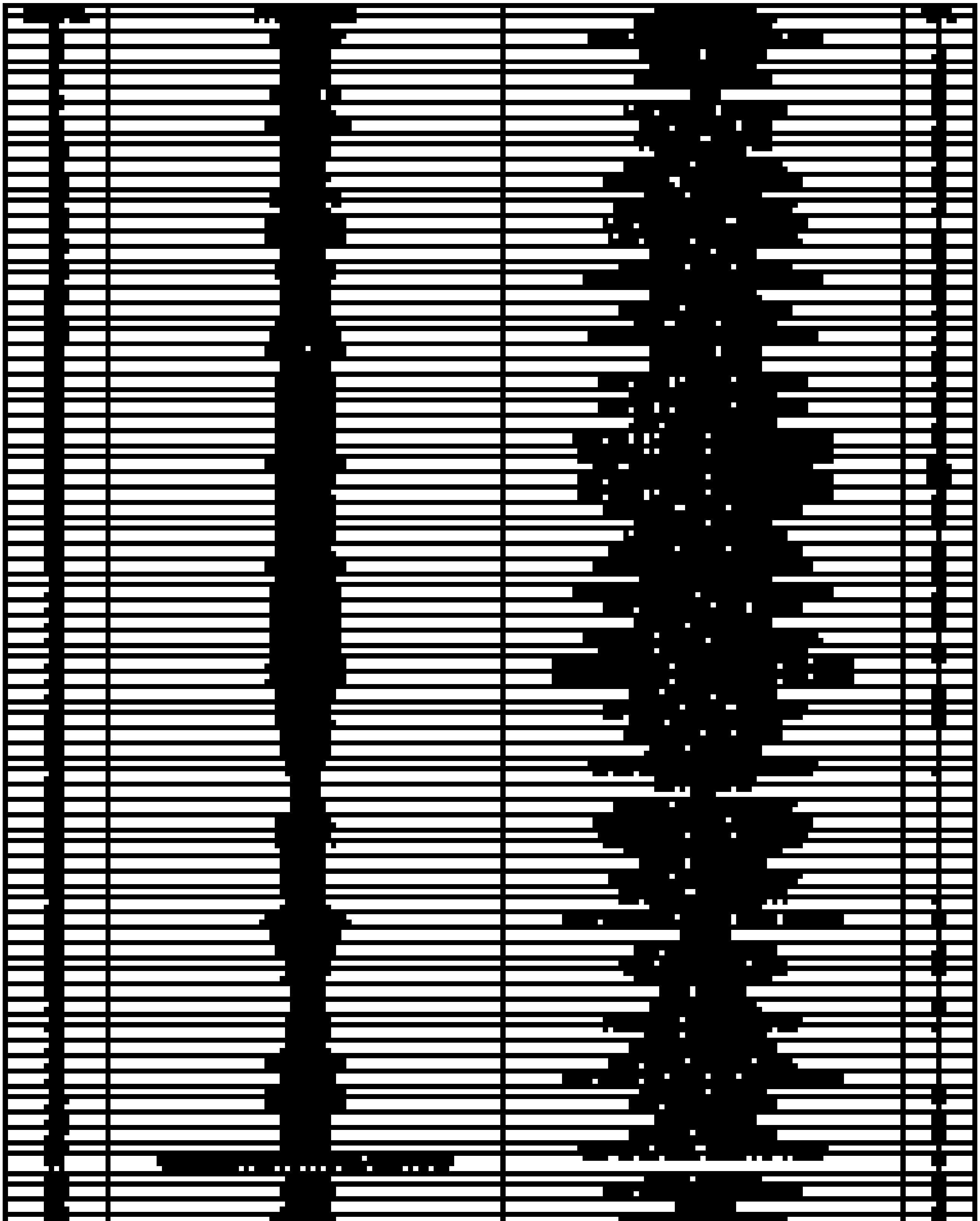


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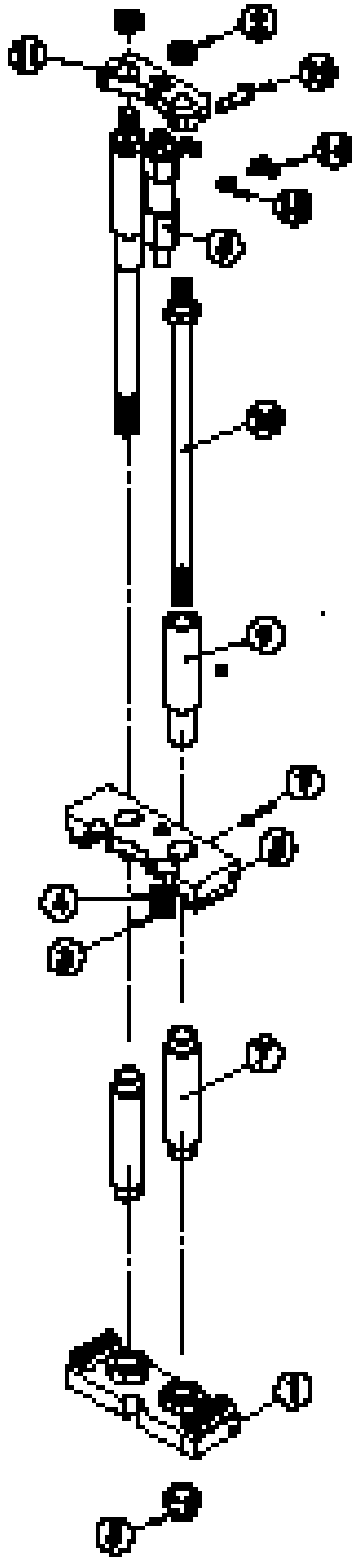
# 950TW
# T-WREX SPINNER



# 950TW
# T-WREX SPINNER



# 51160
# MOTOR CLAMP ASSEMBLY

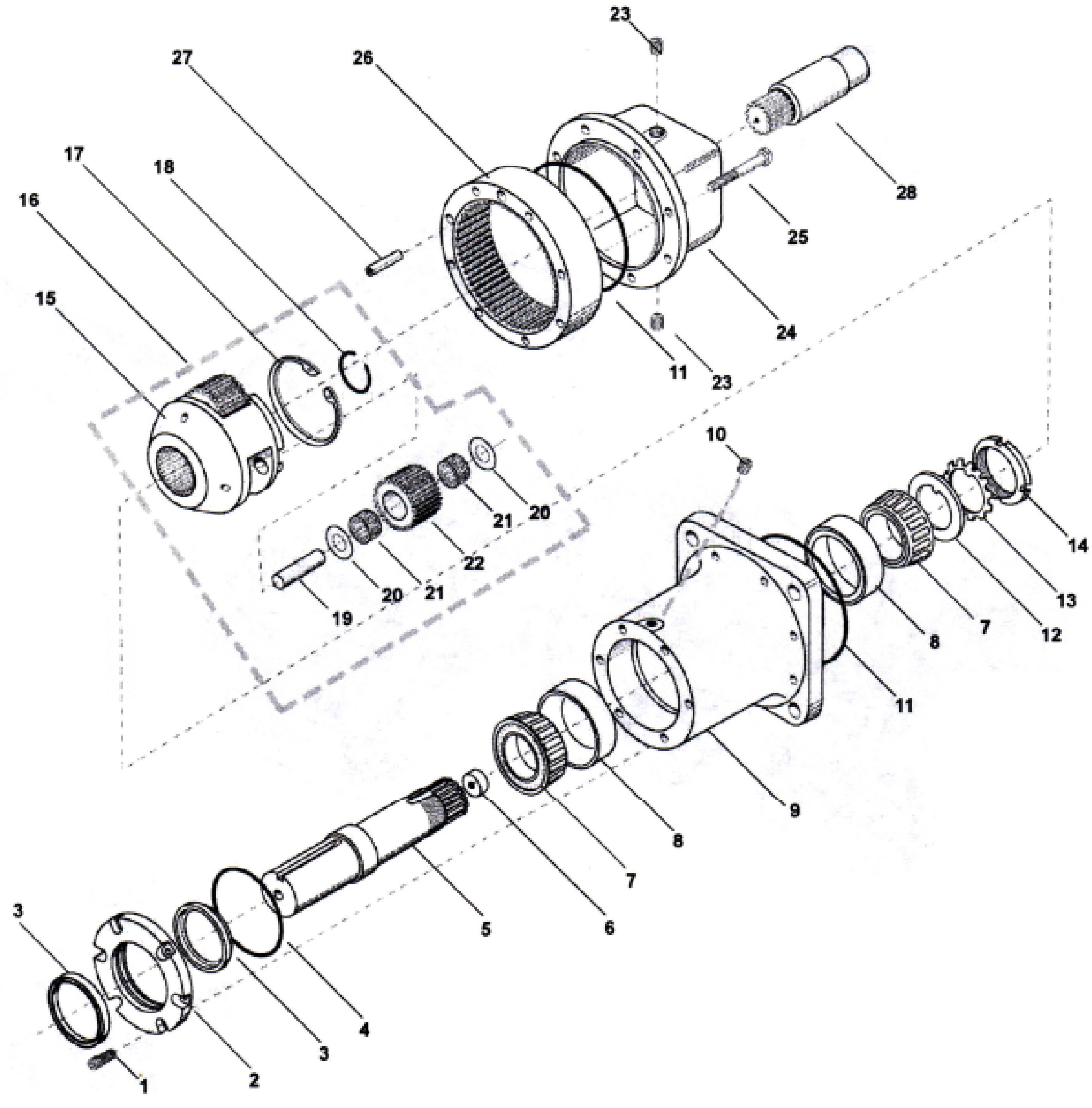


51160

MOTOR CLAMP ASSEMBLY

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# 24625
# SPINNER GEARBOX



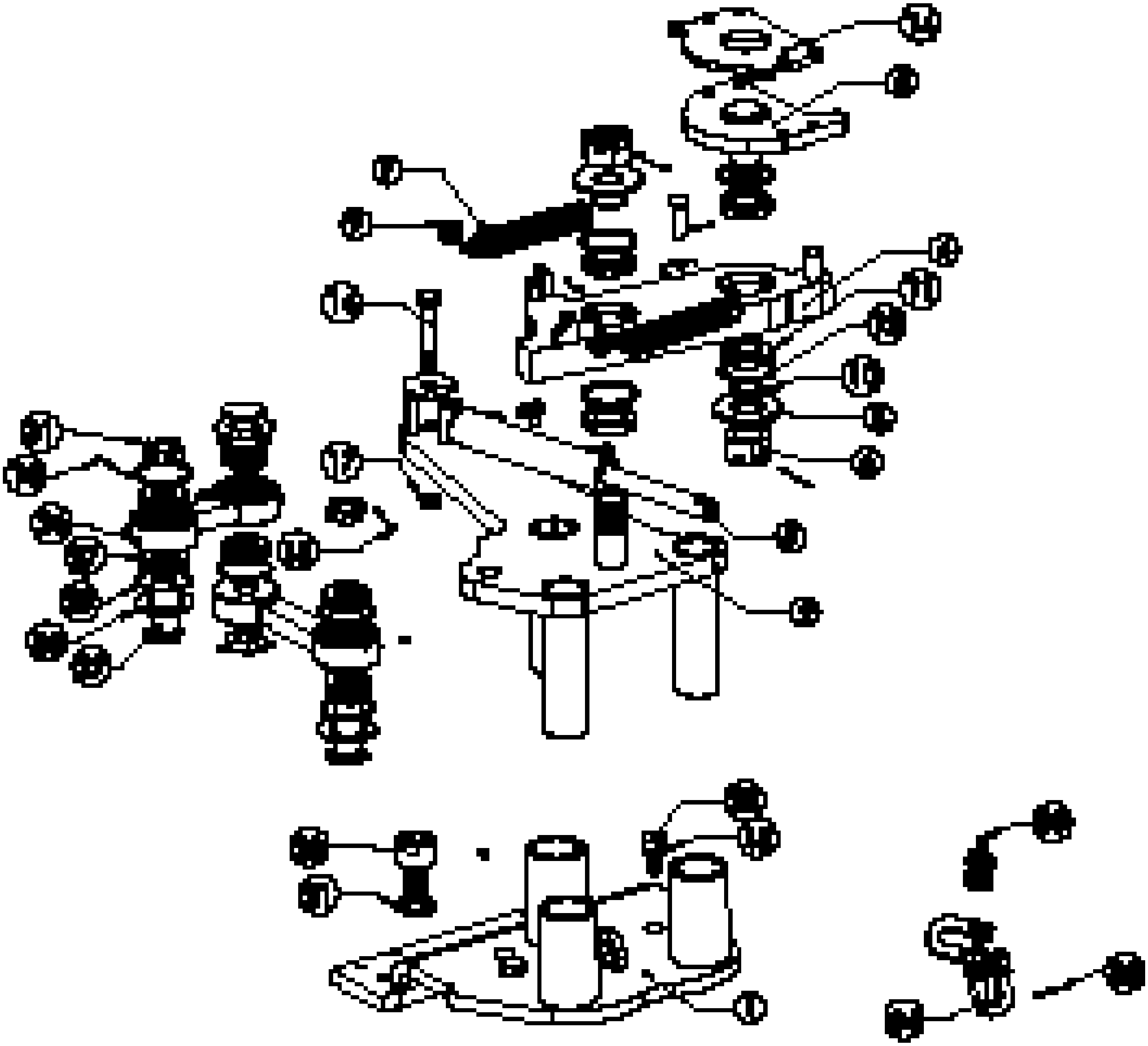
# 24625
# SPINNER GEARBOX

| | | | |
|---|---|---|---|
| 30** | 031-R36 | RETAINER RING | 2 |
| 29** | 031-R35 | PLANET PIN | 1 |
| 28** | 031-R32 | PLANET GEAR | 1 |
| 27** | 031-R33 | PLANET BEARING | 2 |
| 26** | 031-R26 | THRUST WASHER | 2 |
| 25 | 031-R25 | SUN GEAR KIT | 1 |
| 24 | 031-R24 | BOLT | 8 |
| 23 | 031-R23 | PIPE PLUG | 2 |
| 22 | 031-R22 | MOTOR ADAPTOR | 1 |
| 21 | 031-R21 | INTERNAL GEAR | 1 |
| 20** | 031-R34 | PLANET CARRIER | 1 |
| 19 | 031-R19 | LOCK NUT | 1 |
| 18 | 031-R18 | LOCK WASHER | 1 |
| 17 | 031-R17 | KEYED WASHER | 1 |
| 16 | 031-R10/16 | CONE | 1 |
| 15 | 031-R11/15 | CUP | 1 |
| 14* | 031-R14 | O RING | 2 |
| 13 | 031-R13 | PIPE PLUG | 4 |
| 12 | 031-R12 | BEARING HOUSING | 1 |
| 11 | 031-R11/15 | CUP | 1 |
| 10 | 031-R10/16 | CONE | 1 |
| 9 | 031-R09 | RETAINER RING | 2 |
| 8 | 031-R08 | THRUST WASHER | 1 |
| 7 | 031-24707 | OUTPUT SHAFT | 1 |
| 6* | 031-R06 | O RING | 1 |
| 5* | 031-R05 | QUAD RING | 1 |
| 4* | 031-R04 | BACK-UP RING | 1 |
| 3* | 031-R03 | SEAL CARRIER | 1 |
| 2* | 031-R02 | SHAFT SEAL | 1 |
| 1* | 031-R01 | CAP SCREW | 6 |
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |

* - AVAILIBLE ONLY IN KIT #031-24625-SRK

** - AVAILIBLE ONLY IN KIT #031-R31 PLANETARY ASSEMBLY KIT

# 51300
# SPINNER MOUNT



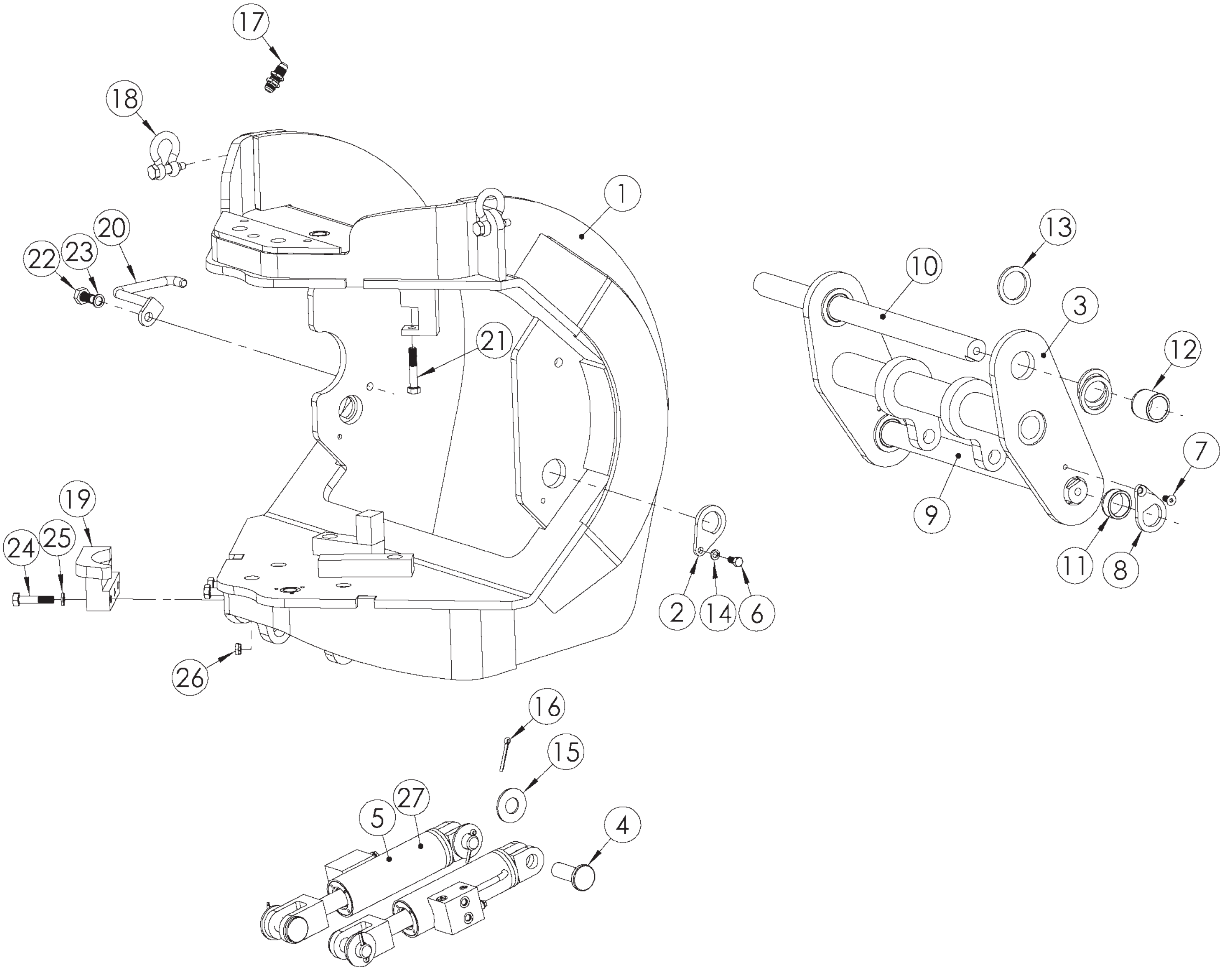
# 51300
# SPINNER MOUNT

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51886L+
51297+51360 UPPER+51360 LOWER+51500

NOTES:

# 51297
# ASSEMBLY, C-HEAD

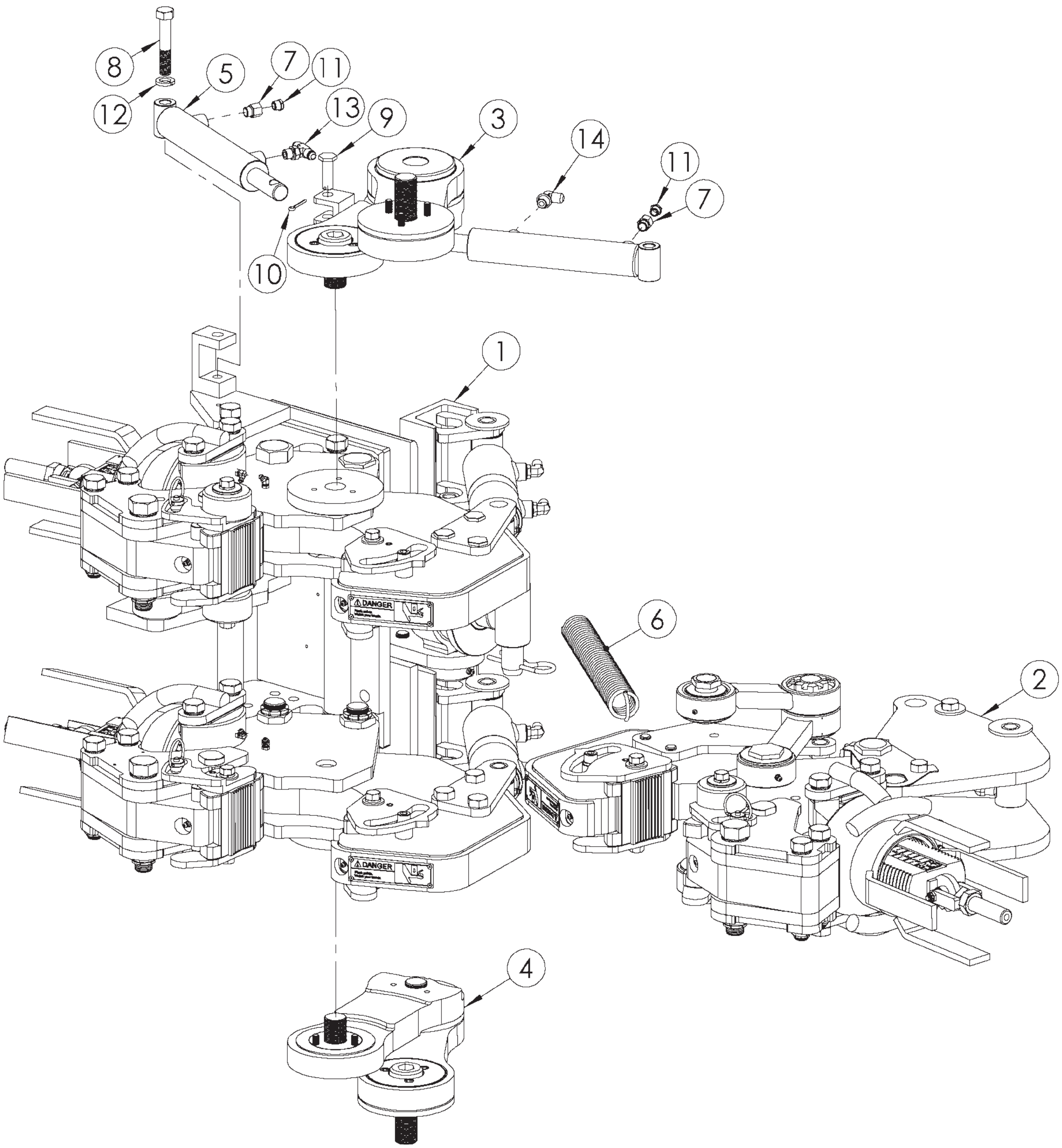


# 51297
# ASSEMBLY, C-HEAD

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 27 | 51342-RK | REPAIR KIT, TILT CYLINDER | |
| 26 | 806415 | 5/8" -11 THIN FLEX LOCKNUT | 3 |
| 25 | 810732 | 5/8" LOCK WASHER | 3 |
| 24 | 806440 | 5/8"-11 X 3.00 LG. HEX BOLT GRD.9 | 3 |
| 23 | 91074A036 | 3/4" LOCK WASHER ASSEMBLY | 1 |
| 22 | 806508 | 3/4"-10 X 1.25 LG. HEX BOLT | 1 |
| 21 | 806442 | 5/8"-11 X 3.50 LG. HEX BOLT GRD.9 | 1 |
| 20 | 51181 | HOSE BRACKET, WELDMENT | 1 |
| 19 | 51546 | STOP, LINKAGE | 1 |
| 18 | G2130 | 5/8" SHACKLE | 2 |
| 17 | 2041-10-10S | -10MJIC FLARE BULKHEAD | 2 |
| 16 | 98338A554 | 1/4" X 3.00 LG. COTTER PIN | 4 |
| 15 | 810849 | 1 1/4" FLAT WASHER | 4 |
| 14 | 810703 | 1/2" LOCK WASHER | 2 |
| 13 | 51248 | SPACER, LINK ARM | 8 |
| 12 | 51390 | BUSHING, C-HEAD TILT | 2 |
| 11 | 51388 | BUSHING, SHORT, LINK ASSY | 2 |
| 10 | 50948-3 | SHAFT, 2-INCH | 1 |
| 9 | 50948-1 | SHAFT, 2-INCH | 1 |
| 8 | 51086 | KEEPER, SHAFT | 2 |
| 7 | 806247 | 1/2"-13 X 1.00 LG. FLAT SH BOLT GRD.9 | 2 |
| 6 | 806246 | 1/2" -13 X 1.00 LG. HEX BOLT GRD.9 | 2 |
| 5 | 51342 | TILT CYLINDER ASSY. | 2 |
| 4 | 51249 | PIN, CLEVIS LOCK | 4 |
| 3 | 51267 | TILT WELDMENT | 1 |
| 2 | 50986 | KEEPER, SHAFT | 2 |
| 1 | 51250 | WELDMENT, C-HEAD FRAME | 1 |

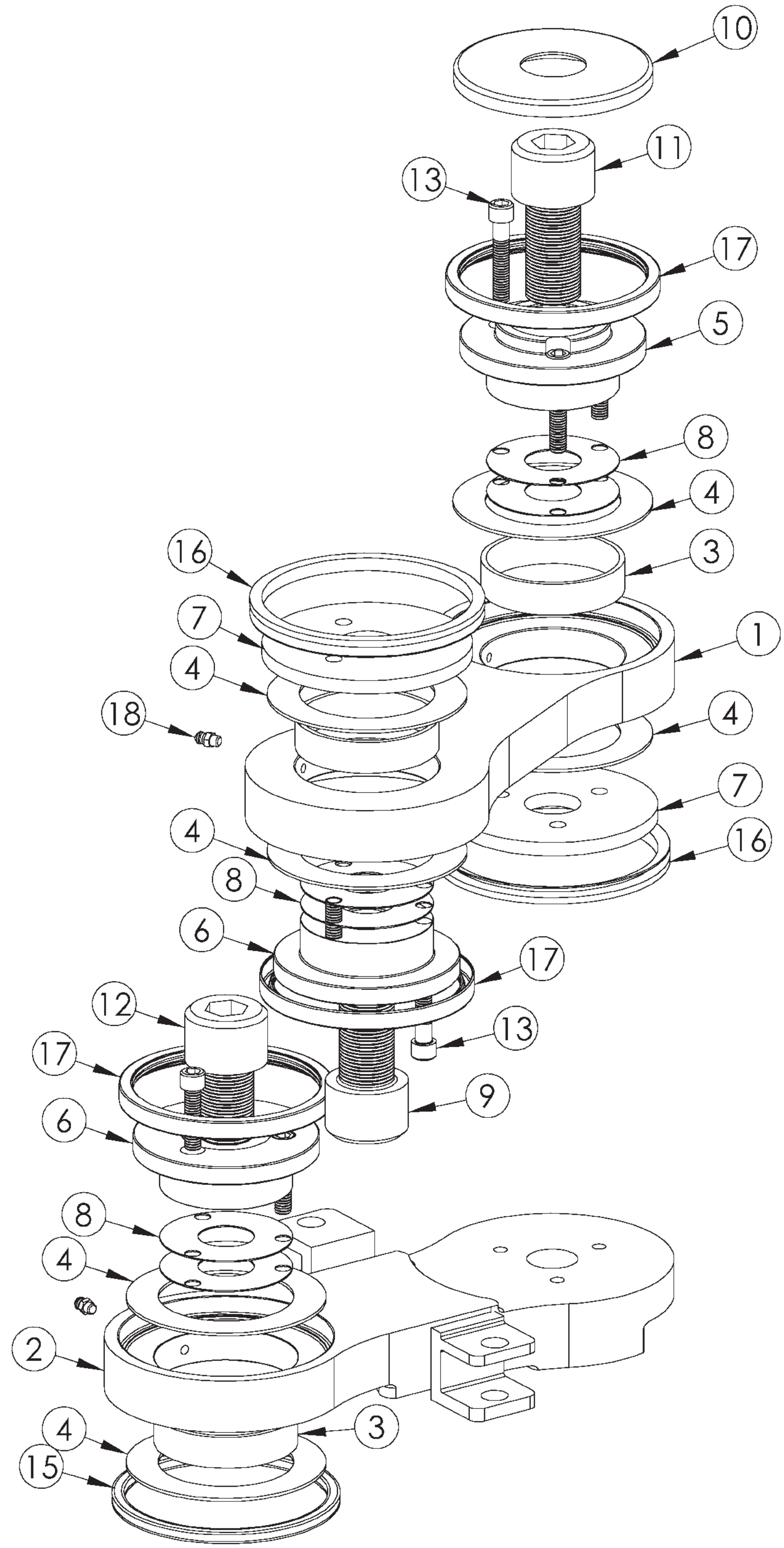
# 51500
# WRENCH ASSEMBLY, T-WREX JR.

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 14 | 2062-6-6S | -6MORB X -6MJIC FITTING 90 DEG. | 1 |
| 13 | 203003-6-6S | -6MORB X -6MJIC TEE FITTING | 1 |
| 12 | 810732 | 5/8" LOCK WASHER | 1 |
| 11 | BVN02 | EXHAUST FILTER | 2 |
| 10 | 807493-125 | 1/8" X 1.25 LG. COTTER PIN | 2 |
| 9 | 51534 | PIN, PUSH CYLINDER | 2 |
| 8 | 806442 | 5/8"-11 X 3.50 LG. HEX BOLT GRD.9 | 1 |
| 7 | 2216-4-6S | -4FNPT X -6MORB STR. ADAPTOR | 2 |
| 6 | 623 | EXTENSION SPRING 14.00 LG. | 1 |
| 5 | 51345 | WRENCH RETRACT CYLINDER | 2 |
| 4 | 51360 LOWER | ASSEMBLY, LOWER LINKAGE | 1 |
| 3 | 51360 UPPER | ASSEMBLY, UPPER LINKAGE | 1 |
| 2 | 51502 | MIDDLE WRENCH ASSY. T-WREX JR. | 1 |
| 1 | 51501 | TOP AND BOTTOM WRENCH ASSY, T-WREX JR | 1 |



NOTES:

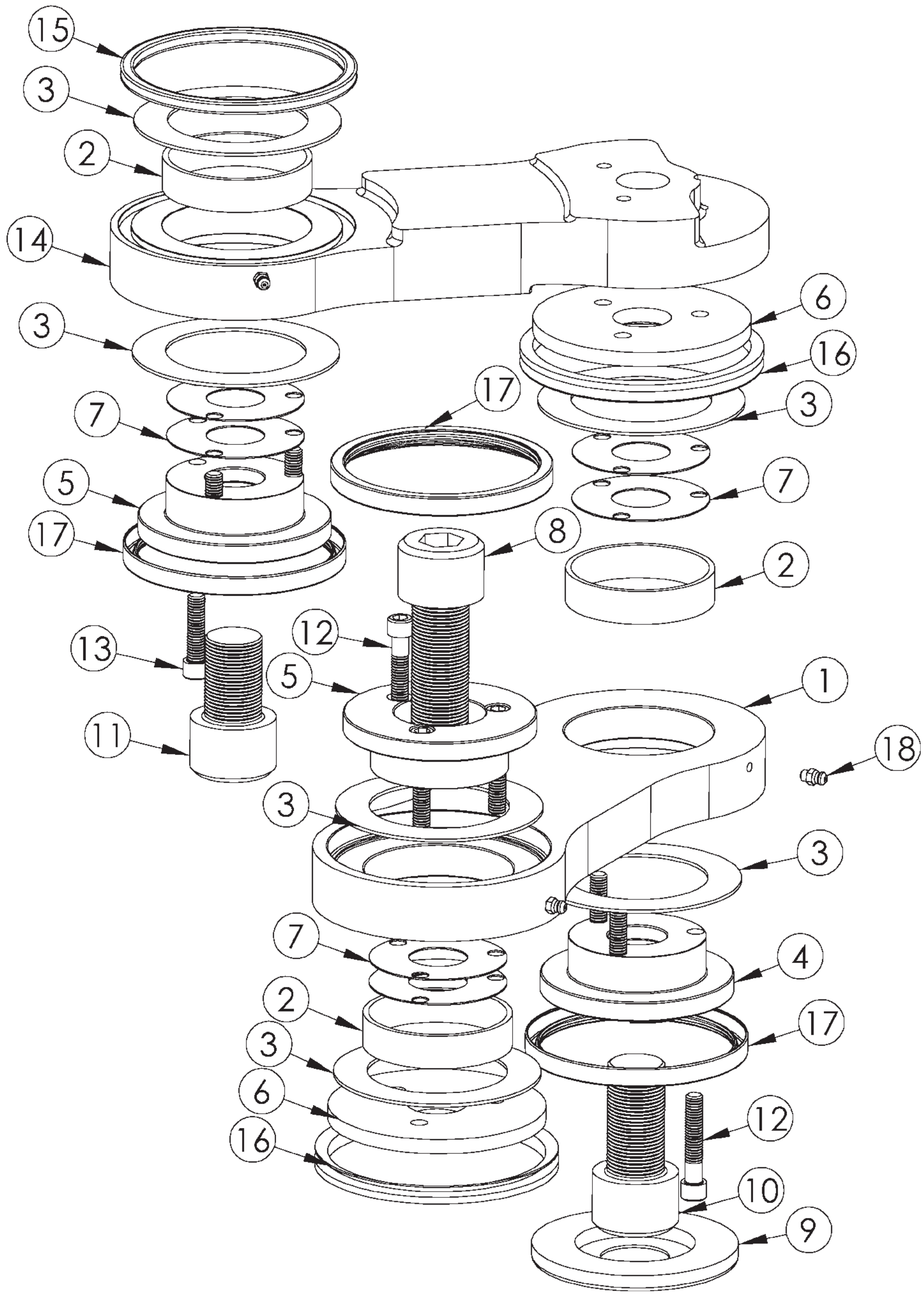
# 51360 UPPER
# ASSEMBLY, UPPER LINKAGE



# 51360 UPPER
# ASSEMBLY, UPPER LINKAGE

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 18 | 1103K1 | GREASE FITTING, STRAIGHT | 3 |
| 17 | 42120 | SEAL | 3 |
| 16 | 401200 | V-SEAL | 2 |
| 15 | 90025K575 | QUAD RING | 1 |
| 14 | 808375 | 3/8"-16 X 1.50 LG. SHCS | 3 |
| 13 | 808376-2 | 3/8"-16 X 2.00 LG. SHCS | 6 |
| 12 | 51367 | BOLT, LINKAGE | 1 |
| 11 | 806676-2 | 1 1/4"-12 X 2.50 LG. SHCS | 1 |
| 10 | 51374 | SLIDER, LINKAGE | 1 |
| 9 | 806677 | 1 1/4"-12 X 3.25 LG. SHCS | 1 |
| 8 | 51112 | SHIM | 6 |
| 7 | 51366 | SPACER | 2 |
| 6 | 51364 | ID RETAINER, FLAT | 2 |
| 5 | 51363 | STEPPED RETAINER | 1 |
| 4 | 51106 | THRUST BEARING | 6 |
| 3 | 51365 | BUSHING, WRENCH LINK | 3 |
| 2 | 51372 | WELDMENT, LINK | 1 |
| 1 | 51361 | WRENCH LINK, JR. | 1 |

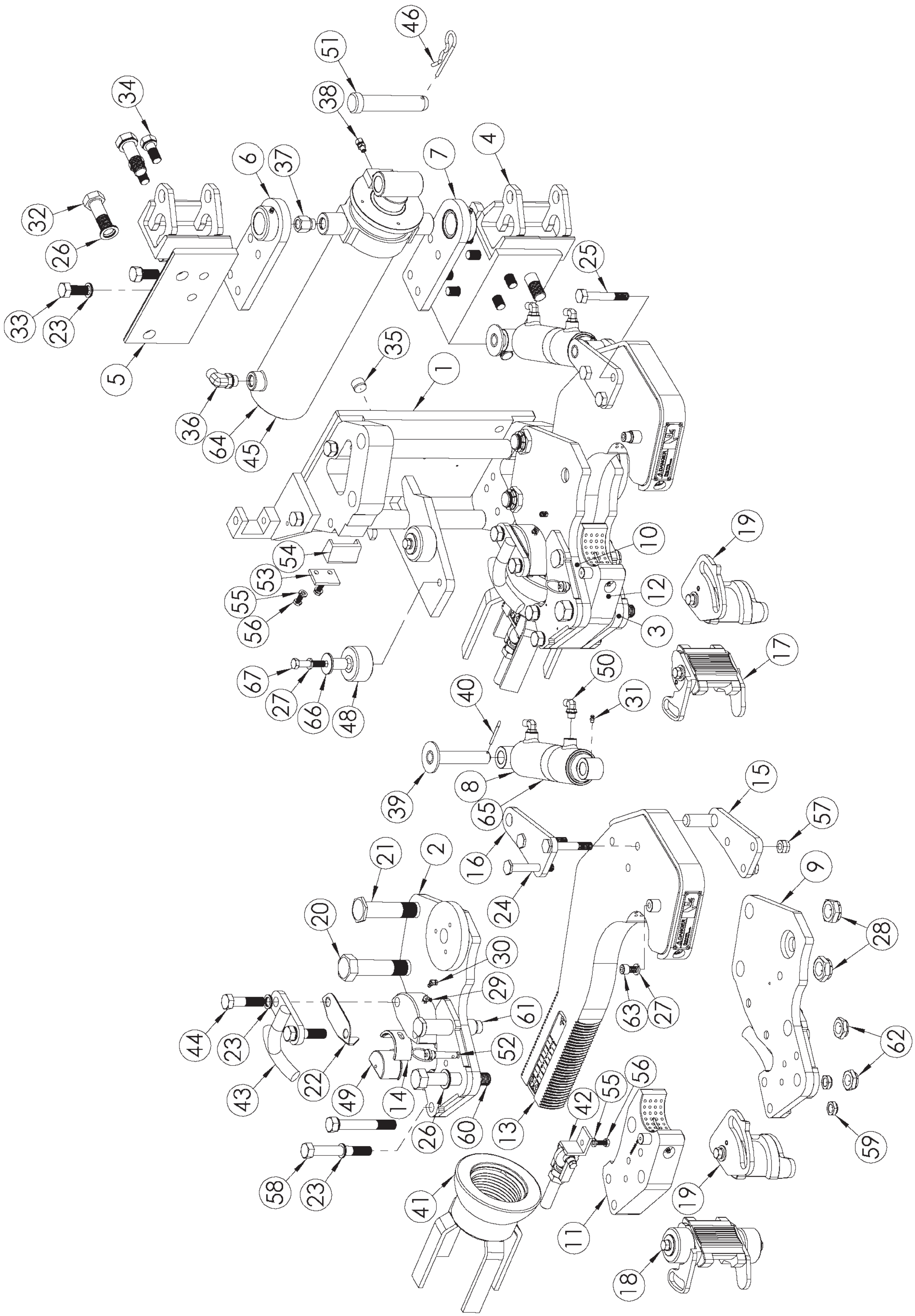
# 51360 LOWER ASSEMBLY, LOWER LINKAGE



# 51360 LOWER
# ASSEMBLY, LOWER LINKAGE

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 18 | 1103K1 | GREASE FITTING, STRAIGHT | 3 |
| 17 | 42120 | SEAL | 3 |
| 16 | 401200 | V-SEAL | 2 |
| 15 | 90025K575 | QUAD RING | 1 |
| 14 | 51362 | ARM, WRENCH LINKAGE | 1 |
| 13 | 808375 | 3/8"-16 X 1.50 LG. SHCS | 3 |
| 12 | 808376-2 | 3/8"-16 X 2.00 LG. SHCS | 6 |
| 11 | 51367 | BOLT, LINKAGE | 1 |
| 10 | 806676-2 | 1 1/4"-12 X 2.50 LG. SHCS | 1 |
| 9 | 51374 | SLIDER, LINKAGE | 1 |
| 8 | 806677 | 1 1/4"-12 X 3.25 LG. SHCS | 1 |
| 7 | 51112 | SHIM | 6 |
| 6 | 51366 | SPACER | 2 |
| 5 | 51364 | ID RETAINER, FLAT | 2 |
| 4 | 51363 | STEPPED RETAINER | 1 |
| 3 | 51106 | THRUST BEARING | 6 |
| 2 | 51365 | BUSHING, WRENCH LINK | 3 |
| 1 | 51361 | WRENCH LINK, JR. | 1 |

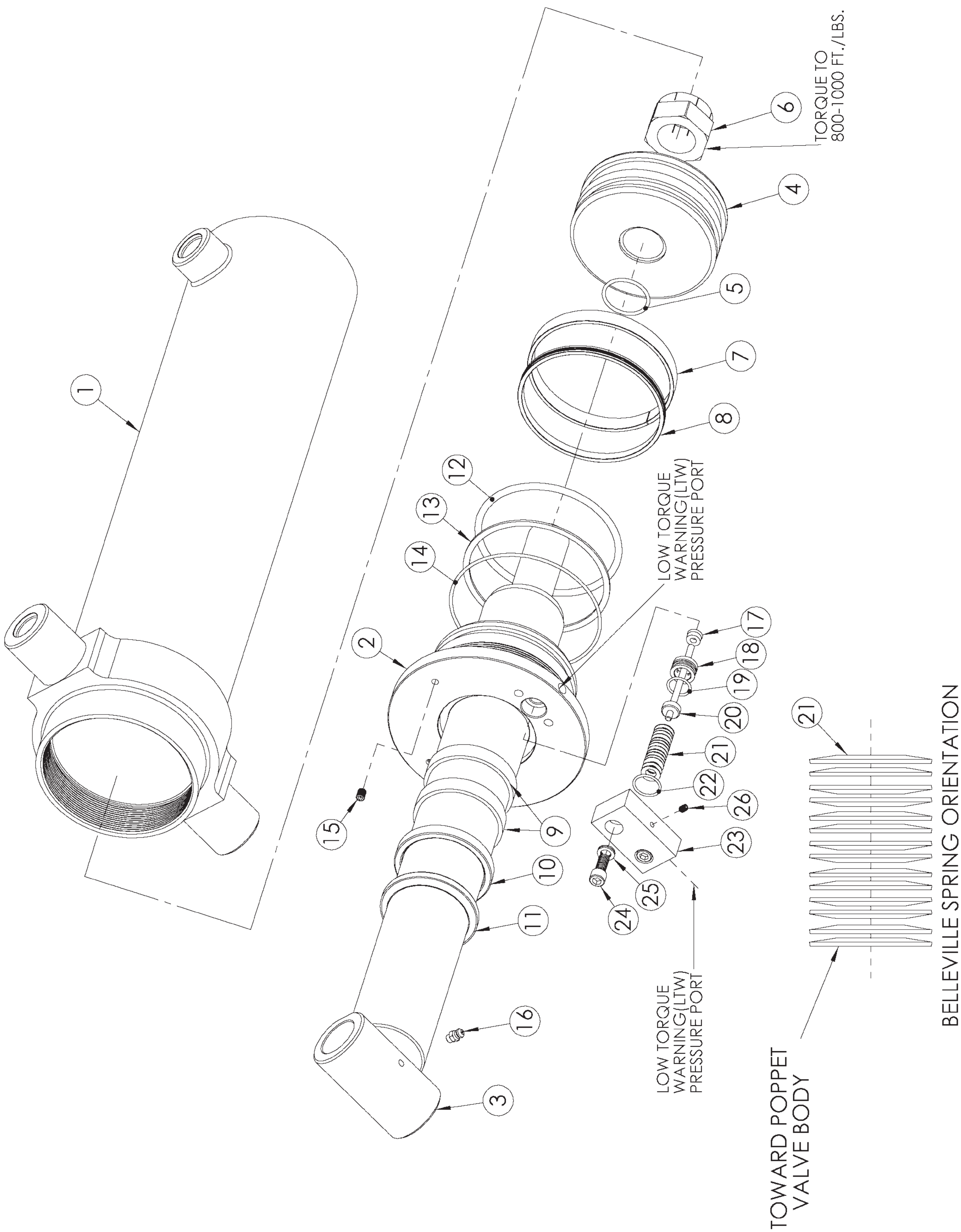
# 51501
# ASSEMBLY, TOP & BOTTOM WRENCH



# 51501
# ASSEMBLY, TOP & BOTTOM WRENCH

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 67 | 806297 | 1/2"-13 X 2.50 LG. HEX BOLT GRD.9 | 2 |
| 66 | 20208 | SPACER BUSHING, ROLLER | 2 |
| 65 | J26-RK | REPAIR KIT, GRIP CYLINDER | |
| 64 | 061-J20-RK | REPAIR KIT, TORQUE CYLINDER | |
| 63 | 808413 | 1/2" - 13 x .75 LG. SHCS | 2 |
| 62 | 806594-500 | 1.00" -14 FLEX NUT | 4 |
| 61 | 30056A | SHOULDER BOLT | 2 |
| 60 | 806630 | 1" - 12 X 6.00 LG. HEX BOLT | 2 |
| 59 | 806523 | 3/4" - 16 FLEX NUT | 4 |
| 58 | 806544 | 3/4"-16 X 5.50 LG. HEX BOLT GRD.9 | 4 |
| 57 | 806414-500 | 5/8" - 11 FLEX NUT | 6 |
| 56 | 806004 | 3/8"-16 X .75 LG. HEX BOLT GRD.5 | 6 |
| 55 | 810645 | 3/8" LOCK WASHER | 6 |
| 54 | 30055 | NUT RETAINER | 2 |
| 53 | 30061 | CLIP, NUT RETAINER | 2 |
| 52 | 92384A092 | PUSH BUTTON PIN | 2 |
| 51 | 30053-1 | PIN, TORQUE CYLINDER | 1 |
| 50 | 2062-6-6S | -6MORB X -6MJIC FITTING 90 DEG. | 4 |
| 49 | 30030 | PIVOT PIN | 4 |
| 48 | 20210 | ROLLER ASSEMBLY | 2 |
| 47 | 51206 | BUMPER | 2 |
| 46 | 98335A114 | RETAINER, HAIRPIN | 1 |
| 45 | J20-TW | ASSEMBLY, TORQUE CYLINDER | 1 |
| 44 | 806539 | 3/4" -16 X 3.00 LG. HEX BOLT GRD.9 | 8 |
| 43 | 30076 | NUT RETAINER | 4 |
| 42 | 30280 | ADJUST NUT LOCKING ASSEMBLY | 2 |
| 41 | 30035 | ADJUST NUT ASSEMBLY | 2 |
| 40 | 807490 | 3/16" X 2.00 LG. COTTER PIN | 2 |
| 39 | 51519 | PIN WELDMENT, TOP AND BOTTOM WRENCH | 2 |
| 38 | 2045-2-2S | -2MNPT X -2FNPT FITTING STR. SWIVEL | 1 |
| 37 | 2216-8-10S | 1/2" FNPT x 7/8"-14 ADAPTER | 1 |
| 36 | 2062-10-10S | -10MORB x -10MJIC FITTING 90 DEG. | 1 |
| 35 | 30111 | BUMPER, TORQUE CYLINDER | 1 |
| 34 | 30117 | ANGLE BRACKET BOLT, SMALL | 4 |
| 33 | 806529 | 3/4" - 16 x 1.75 LG. HEX BOLT GRD. 9 | 8 |
| 32 | 30118 | ANGLE BRACKET BOLT, LARGE | 4 |
| 31 | 1103K1 | GREASE FITTING, STRAIGHT | 10 |
| 30 | 1103K2 | GREASE FITTING, 45 DEG. | 4 |
| 29 | 1103K3 | GREASE FITTING, 90 DEG. | 4 |
| 28 | 806646 | 1 1/4"-12 FLEX LOCKNUT | 4 |
| 27 | 810703 | 1/2" LOCK WASHER | 4 |
| 26 | 91074A038 | 1.00" LOCK WASHER ASSY. | 6 |
| 25 | 806453 | 5/8"-11 X 4.00 LG HEX BOLT GRD.9 | 3 |
| 24 | 806453-M | BOLT, MODIFIED | 3 |
| 23 | 91074A036 | 3/4" LOCK WASHER ASSEMBLY | 24 |
| 22 | 30029-1 | PIVOT SLEEVE KEEPER | 4 |
| 21 | 51506 | BOLT, WRENCH, T-WREX JR | 2 |
| 20 | 30115 | BOLT, WRENCH | 2 |
| 19 | 51543 | TOP AND BOTTOM HOOK DIE HOLDER ASSEMBLY | 2 |
| 18 | 51541 | TOP HEEL DIE HOLDER ASSEMBLY | 1 |
| 17 | 51542 | BOTTOM HEEL DIE HOLDER ASSEMBLY | 1 |
| 16 | 30014-2 | CLEVIS PLATE TOP-BOTTOM HOOK | 2 |
| 15 | 30014-1 | CLEVIS PLATE HOOK PIN ASSY | 2 |
| 14 | 30029 | PIVOT SLEEVE | 4 |
| 13 | 30002 | HOOK ASSEMBLY | 2 |
| 12 | 30005A-001 | DIE PIVOT BLOCK ASSEMBLY,BOTTOM WRENCH | 1 |
| 11 | 30005A-003 | DIE PIVOT BLOCK ASSEMBLY,TOP WRENCH | 1 |
| 10 | 30004-3B | JAW PLATE ASSEMBLY | 1 |
| 9 | 30004-1A | JAW PLATE ASSEMBLY | 1 |
| 8 | J26 | GRIP CLYLINDER | 2 |
| 7 | 51311 | WELDMENT, LOWER TORQUE CYL. MOUNT | 1 |
| 6 | 51310 | WELDMENT, UPPER TORQUE CYL. MOUNT | 1 |
| 5 | 50027-2 | ANGLE MOUNT ASSEMBLY, UPPER | 1 |
| 4 | 50027-1 | ANGLE MOUNT ASSEMBLY, LOWER | 1 |
| 3 | 51504 | JAW PLATE ASSEMBLY, T-WREX JR. | 1 |
| 2 | 51503 | JAW PLATE ASSEMBLY, T-WREX JR. | 1 |
| 1 | 31019 | BASE PLATE ASSY, T-WREX JR | 1 |

# J20-TW
# ASSEMBLY, TORQUE CYLINDER



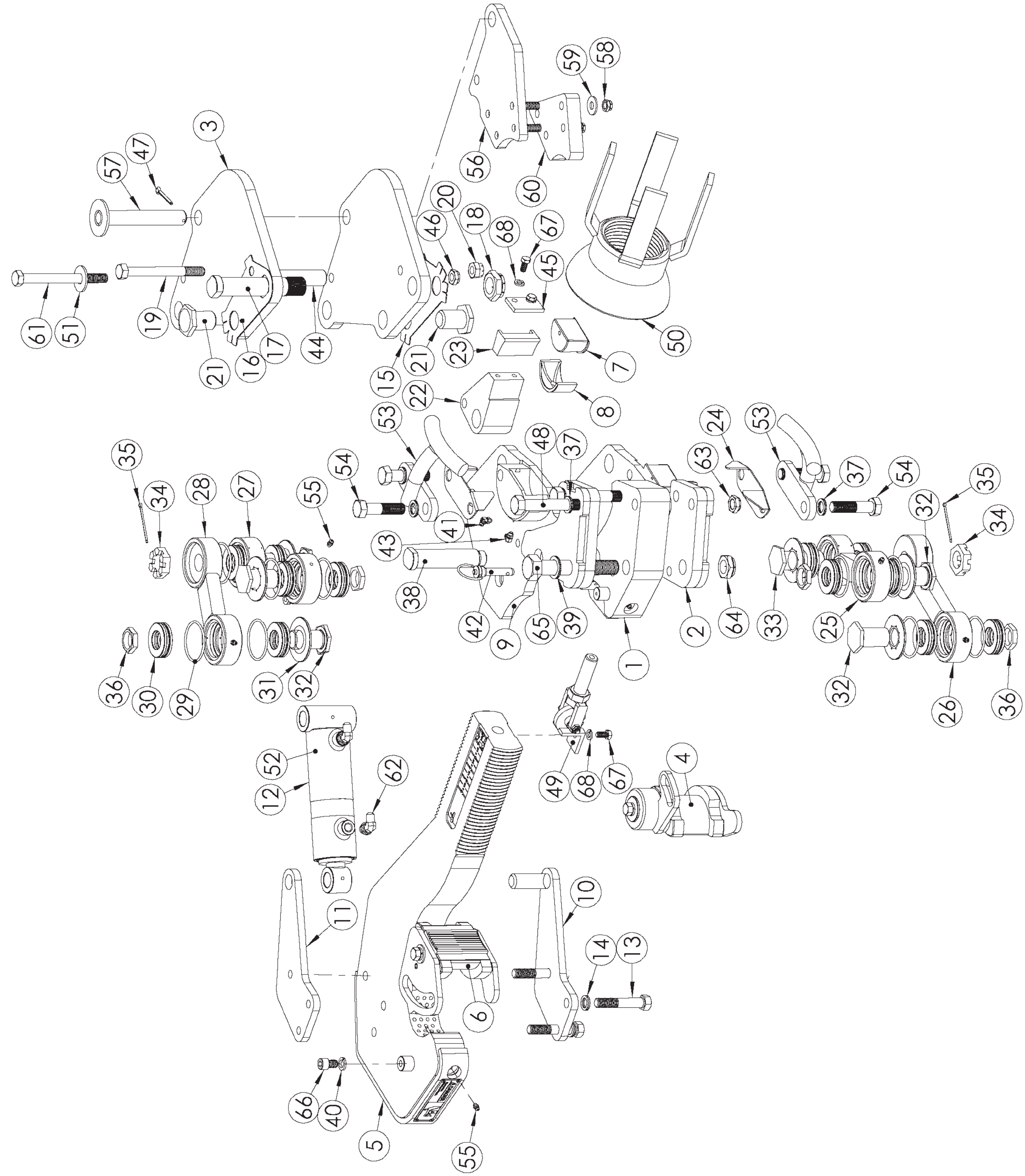
# J20-TW
# ASSEMBLY, TORQUE CYLINDER

| | | | |
|---|---|---|---|
| 27 | 061-J20-RK* | SEAL KIT | |
| 26 | 809396-1 | #10-32 X .25 SOC. HD. SET SCREW SS | 1 |
| 25 | 91074A030 | ASSEMBLY, 5/16" LOCK WASHER | 2 |
| 24 | 805959 | 5/16" - 24 x .75 LG. SHCS | 2 |
| 23 | 30065 | BODY, POPPET VALVE | 1 |
| 22 | PRP568-018 | O-RING, POPPET VALVE BODY | 1 |
| 21 | 022S | SPRING, BELLVILLE | 14 |
| 20 | 30064** | PIN, POPPET | 1 |
| 19 | PRP568-016 | O-RING, POPPET SEAT | 1 |
| 18 | 20238** | SEAT, POPPET | 1 |
| 17 | LTW-RK | U CUP, POPPET PIN | 1 |
| 16 | 1103K1 | GREASE FITTING, STRAIGHT | 1 |
| 15 | 20341 | 1/4"-28 X .38 LG. SOC.HD SET SCREW | 2 |
| 14 | 10904* | O-RING | 1 |
| 13 | 10237* | BACK-UP | 1 |
| 12 | 10236* | O-RING | 1 |
| 11 | 12904* | WIPER | 1 |
| 10 | 17631* | SEAL | 1 |
| 9 | 30420* | WEAR RING | 2 |
| 8 | 11963* | SEAL | 1 |
| 7 | 30218* | WEAR RING | 1 |
| 6 | 20011 | LOCKNUT | 1 |
| 5 | 10418* | O-RING | 1 |
| 4 | 73225 | PISTON | 1 |
| 3 | 5E264 | ROD ASSY. | 1 |
| 2 | 7AO53 | HEAD | 1 |
| 1 | 4X442-TW | WELDMENT, BODY, TORQUE CYLINDER, T-WREX | 1 |
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |

* SEALS ARE ONLY AVAILIBLE IN SEAL KIT #061-J20-RK

** - ONLY AVAILIBLE IN KIT #061-LTW-P/S

# 51502
# ASSEMBLY, MIDDLE WRENCH

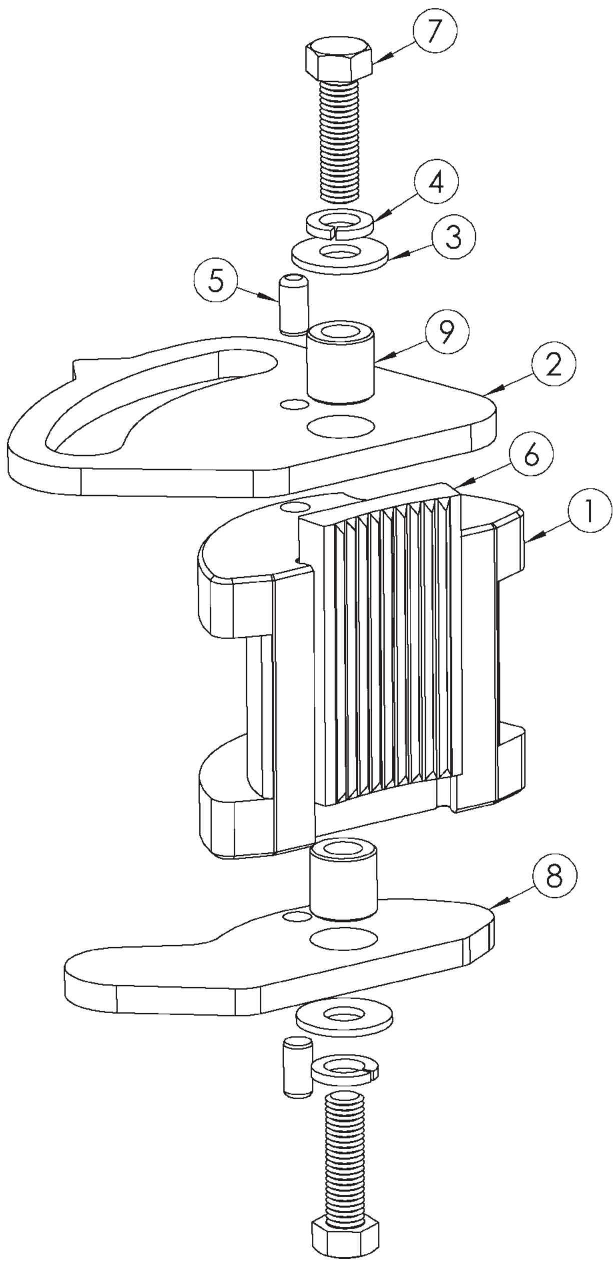


# 51502
# ASSEMBLY, MIDDLE WRENCH

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 68 | 810645 | 3/8" LOCK WASHER | 3 |
| 67 | 806004 | 3/8"-16 X .75 LG. HEX BOLT GRD.5 | 3 |
| 66 | 808413 | 1/2" - 13 x .75 LG. SHCS | 1 |
| 65 | 806630 | 1" - 12 X 6.00 LG. HEX BOLT | 1 |
| 64 | 806594-500 | 1.00" -14 FLEX NUT | 2 |
| 63 | 806523 | 3/4" - 16 FLEX NUT | 2 |
| 62 | 2062-6-6S | -6MORB X -6MJIC FITTING 90 DEG. | 2 |
| 61 | 806447 | 5/8"-11 X 6.50 LG. HEX BOLT GRD.9 | 1 |
| 60 | 30230-1 | BUMPER | 1 |
| 59 | 810705 | 1/2" FLAT WASHER | 4 |
| 58 | 806221 | 1/2"-13 FLEX LOCKNUT | 4 |
| 57 | 51547 | MIDDLE WRENCH GRIP PIN | 1 |
| 56 | 30231 | PLATE ASSEMBLY, BUMPER CLEVIS | 1 |
| 55 | 1103K1 | GREASE FITTING, STRAIGHT | 9 |
| 54 | 806539 | 3/4" -16 X 3.00 LG. HEX BOLT GRD.9 | 4 |
| 53 | 30076 | NUT RETAINER | 2 |
| 52 | J26-RK | REPAIR KIT, GRIP CYLINDER | |
| 51 | 810735 | 5/8" FLAT WASHER | 1 |
| 50 | 30035 | ADJUST NUT ASSEMBLY | 1 |
| 49 | 30280 | ADJUST NUT LOCKING ASSEMBLY | 1 |
| 48 | 806544 | 3/4"-16 X 5.50 LG. HEX BOLT GRD.9 | 2 |
| 47 | 807490 | 3/16" X 2.00 LG. COTTER PIN | 1 |
| 46 | 806415 | 5/8" -11 THIN FLEX LOCKNUT | 1 |
| 45 | 30061 | CLIP, NUT RETAINER | 1 |
| 44 | 30062 | SPACER, MIDDLE WRENCH | 1 |
| 43 | 1103K3 | GREASE FITTING, 90 DEG. | 2 |
| 42 | 92384A092 | PUSH BUTTON PIN | 1 |
| 41 | 1103K2 | GREASE FITTING, 45 DEG. | 2 |
| 40 | 810703 | 1/2" LOCK WASHER | 1 |
| 39 | 91074A038 | 1.00" LOCK WASHER ASSY. | 1 |
| 38 | 30056A | SHOULDER BOLT | 1 |
| 37 | 91074A036 | 3/4" LOCK WASHER ASSEMBLY | 6 |
| 36 | 30145 | LINKAGE JAM NUT | 4 |
| 35 | 807493-250 | 1/8" X 2.50 LG. COTTER PIN | 2 |
| 34 | 30420 | CASTLE NUT, MODIFIED | 2 |
| 33 | 30043-3 | ARM BOLT | 2 |
| 32 | 30043-2 | ARM BOLT | 4 |
| 31 | 20029-138AM | WASHER ASSEMBLY | 6 |
| 30 | 146 | BALL THRUST BEARING | 12 |
| 29 | PRP568-230 | O RING | 12 |
| 28 | 30042-1 | LINK ASSEMBLY, WRENCH | 1 |
| 27 | 30038-2MB | LINK ASSEMBLY, WRENCH | 1 |
| 26 | 30042-2 | LINK ASSEMBLY, WRENCH | 1 |
| 25 | 30038-1MT | LINK ASSEMBLY, WRENCH | 1 |
| 24 | 30029-1 | PIVOT SLEEVE KEEPER | 2 |
| 23 | 30055 | NUT RETAINER | 1 |
| 22 | 30007 | SPACER, NUT RETAINER | 1 |
| 21 | 51516 | BOLT, WRENCH | 2 |
| 20 | 806414-500 | 5/8" - 11 FLEX NUT | 1 |
| 19 | 806449 | 5/8" -11 X 5.95 LG. HEX BOLT GRD.9 | 1 |
| 18 | 806646 | 1 1/4"-12 FLEX LOCKNUT | 1 |
| 17 | 30114 | BOLT, WRENCH | 1 |
| 16 | 30289-1 | LOCK PLATE, TOP | 1 |
| 15 | 30289-2 | LOCK PLATE, BTM | 1 |
| 14 | 91074A035 | 5/8" LOCK WASHER ASSY. | 3 |
| 13 | 806442 | 5/8"-11 X 3.50 LG. HEX BOLT GRD.9 | 3 |
| 12 | J26 | GRIP CLYLINDER | 1 |
| 11 | 30013-2 | CLEVIS PLATE, MIDDLE HOOK, THREADED | 1 |
| 10 | 30013-1 | CLEVIS PLATE, MIDDLE HOOK, PIN ASSY | 1 |
| 9 | 30004-2B | JAW PLATE ASSEMBLY | 1 |
| 8 | 30029 A | PIVOT SLEEVE | 2 |
| 7 | 30030 | PIVOT PIN | 2 |
| 6 | 51539 | MIDDLE HOOK DIE HOLDER ASSEMBLY | 1 |
| 5 | 30002 | HOOK ASSEMBLY | 1 |
| 4 | 51540 | MIDDLE HEEL DIE HOLDER ASSEMBLY | 1 |
| 3 | 30232 | TORQUE ARM, MACHINED | 2 |
| 2 | 30004-2A | JAW PLATE ASSEMBLY | 1 |
| 1 | 30005A-002 | DIE PIVOT BLOCK ASSEMBLY,MIDDLE WRENCH | 1 |
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |

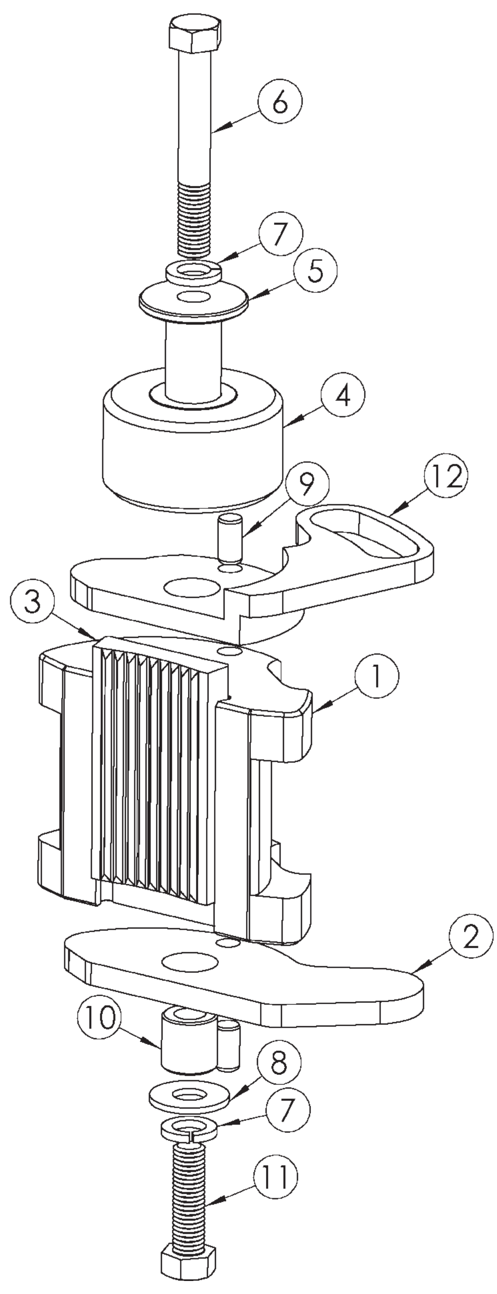
# 51539
# ASSEMBLY, MIDDLE HOOK DIE HOLDER

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 9 | 20208-870 | SPACER, DIE HOLDER | 2 |
| 8 | 20213A | DIE RETAINER, MIDDLE BOTTOM | 1 |
| 7 | 806276 | 1/2" -13 X 1.75 LG. HEX BOLT GRD.8 | 2 |
| 6 | 20194 | DIE | 1 |
| 5 | 98381A622 | 3/8" X .75 LG. S.S. DOWEL PIN | 2 |
| 4 | 810703 | 1/2" LOCK WASHER | 2 |
| 3 | 810705 | 1/2" FLAT WASHER | 2 |
| 2 | 30012-1 | DIE RETAINER, HOOK TOP | 1 |
| 1 | 30031 | DIE HOLDER | 1 |



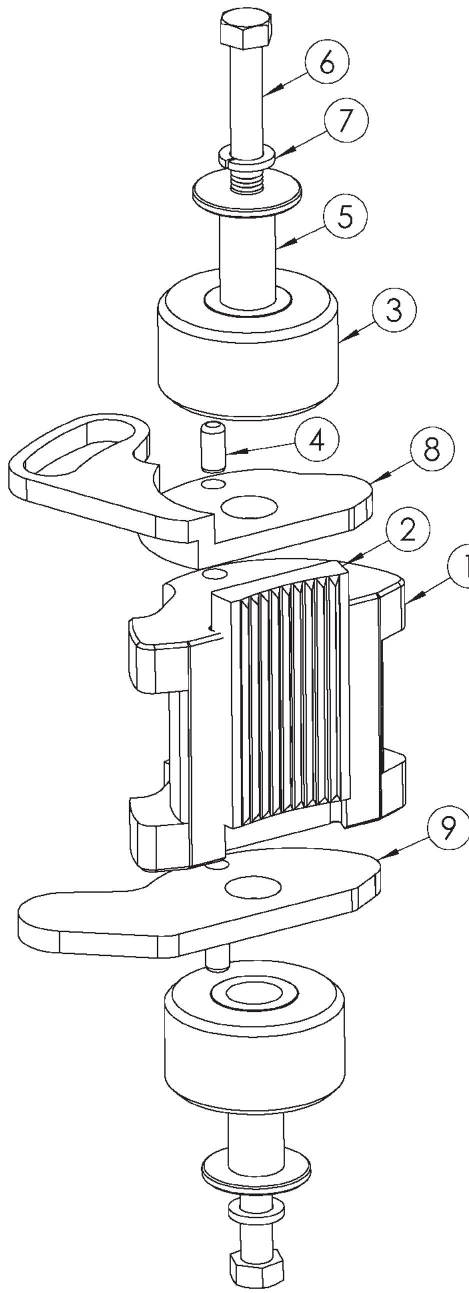
# 51540
# ASSEMBLY, MIDDLE HEEL DIE HOLDER

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 12 | 30012A-2 | DIE RETAINER PLATE | 1 |
| 11 | 806276 | 1/2" -13 X 1.75 LG. HEX BOLT GRD.8 | 1 |
| 10 | 20208-870 | SPACER, DIE HOLDER | 1 |
| 9 | 98381A622 | 3/8" X .75 LG. S.S. DOWEL PIN | 2 |
| 8 | 810705 | 1/2" FLAT WASHER | 1 |
| 7 | 810703 | 1/2" LOCK WASHER | 2 |
| 6 | 806303 | 1/2"-13 X 3.50 LG. HEX BOLT GRD.9 | 1 |
| 5 | 20208A | SPACER BUSHING, ROLLER | 1 |
| 4 | 20210 | ROLLER ASSEMBLY | 1 |
| 3 | 20194 | DIE | 1 |
| 2 | 20213A | DIE RETAINER, MIDDLE BOTTOM | 1 |
| 1 | 30031 | DIE HOLDER | 1 |



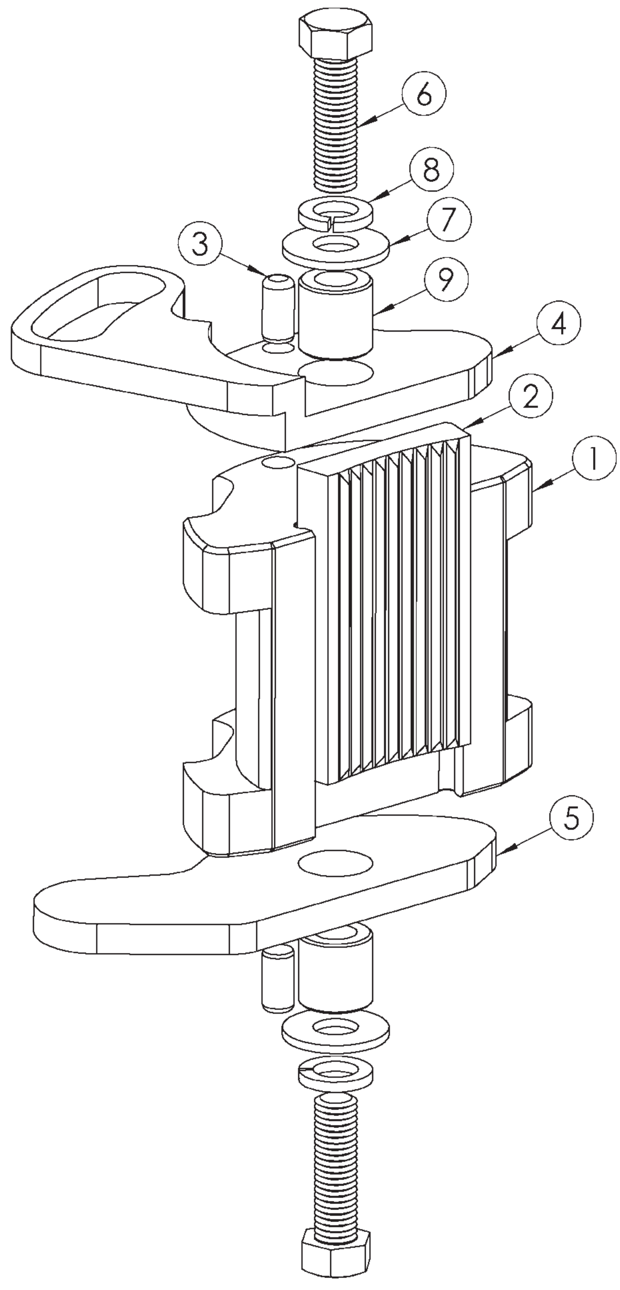
# 51541
# ASSEMBLY, TOP HEEL DIE HOLDER

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 9 | 20213A | DIE RETAINER, MIDDLE BOTTOM | 1 |
| 8 | 30012A-1 | DIE RETAINER PLATE | 1 |
| 7 | 810703 | 1/2" LOCK WASHER | 2 |
| 6 | 806303 | 1/2"-13 X 3.50 LG. HEX BOLT GRD.9 | 2 |
| 5 | 20208A | SPACER BUSHING, ROLLER | 2 |
| 4 | 98381A622 | 3/8" X .75 LG. S.S. DOWEL PIN | 2 |
| 3 | 20210 | ROLLER ASSEMBLY | 2 |
| 2 | 20194 | DIE | 1 |
| 1 | 30031 | DIE HOLDER | 1 |



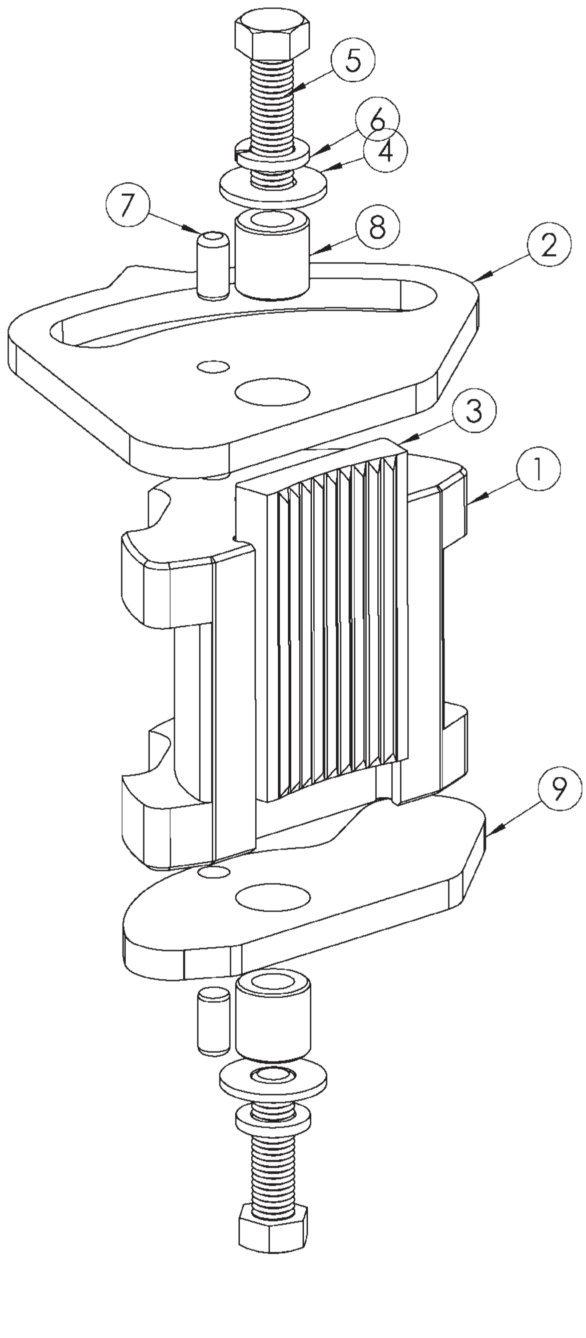
# 51542
# ASSEMBLY, BOTTOM HEEL DIE HOLDER

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|---|---|---|---|
| 9 | 20208-870 | SPACER, DIE HOLDER | 2 |
| 8 | 810703 | 1/2" LOCK WASHER | 2 |
| 7 | 810705 | 1/2" FLAT WASHER | 2 |
| 6 | 806276 | 1/2" -13 X 1.75 LG. HEX BOLT GRD.8 | 2 |
| 5 | 20213A | DIE RETAINER, MIDDLE BOTTOM | 1 |
| 4 | 30012A-1 | DIE RETAINER PLATE | 1 |
| 3 | 98381A622 | 3/8" X .75 LG. S.S. DOWEL PIN | 2 |
| 2 | 20194 | DIE | 1 |
| 1 | 30031 | DIE HOLDER | 1 |



# 51543
# ASSEMBLY, TOP & BOTTOM HOOK
# DIE HOLDER

| 9 | 20213A | DIE RETAINER, MIDDLE BOTTOM | 1 |
|---|---|---|---|
| 8 | 20208-870 | SPACER, DIE HOLDER | 2 |
| 7 | 98381A622 | 3/8" X .75 LG. S.S. DOWEL PIN | 2 |
| 6 | 810703 | 1/2" LOCK WASHER | 2 |
| 5 | 806276 | 1/2" -13 X 1.75 LG. HEX BOLT GRD.8 | 2 |
| 4 | 810705 | 1/2" FLAT WASHER | 2 |
| 3 | 20194 | DIE | 1 |
| 2 | 30012-1 | DIE RETAINER, HOOK TOP | 1 |
| 1 | 30031 | DIE HOLDER | 1 |
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |



# Operation
# &
# Service Manual

# Safety Requirements

Hawk equipment is installed and operated in a controlled drilling rig environment involving hazardous situations. Proper maintenance is important for safe and reliable operation. Procedures outlined in Hawk manuals are the recommended methods of performing operations and maintenance.

# Personnel Training

All personnel performing installation, operations, repair, or maintenance procedures on the equipment, or those in the vicinity of the equipment, should be trained on the rig safety, tool operation, and maintenance to ensure their safety.
**Only authorized Hawk repair technicians should perform major disassembly and assembly procedures.*

# Recommended Tools

Service operations may require the use of tools designed specifically for the pupose described. Hawk recommends that only those tools specified be used when stated. Ensure that personnel and equipment safety are not jeopardized when following service procedures or using tools not specifically recommended by Hawk.

# General Safety Practices

The equipment discussed in this manual may require or contain one or more utilities, such as electrical, hydraulic, or pneumatic.

*Isolate energy sources before beginning work.
*Avoid performing maintenace or repairs while the equipment is in operation.
*Wear proper protective equipment during equipment installation, maintenance or repair.

# Replacing Components

*Verify that all components (such as cables, hoses, etc.) are tagged and labeled during assembly and disassembly of equipment to ensure correct installation.

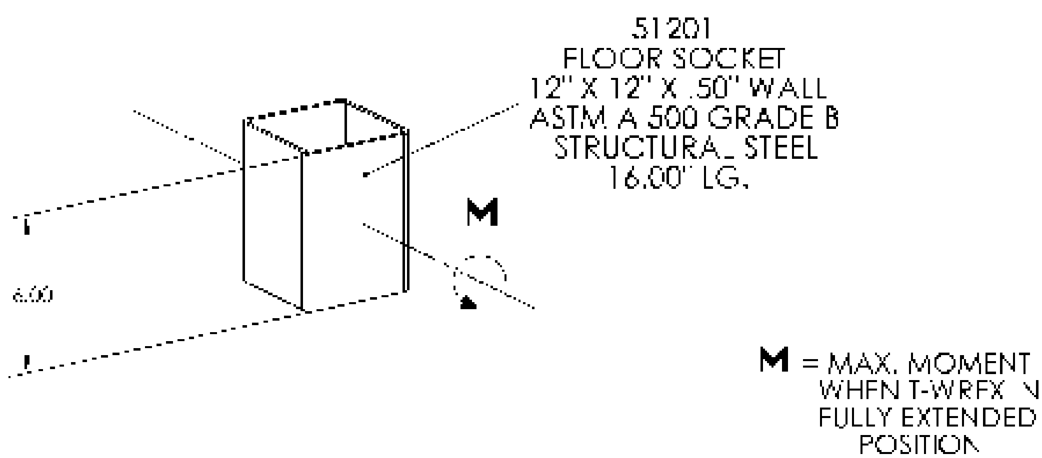
*Replace failed or damaged components with Hawk certified parts. Failure to do so could result in equipment damage or injury to personnel.

# Description

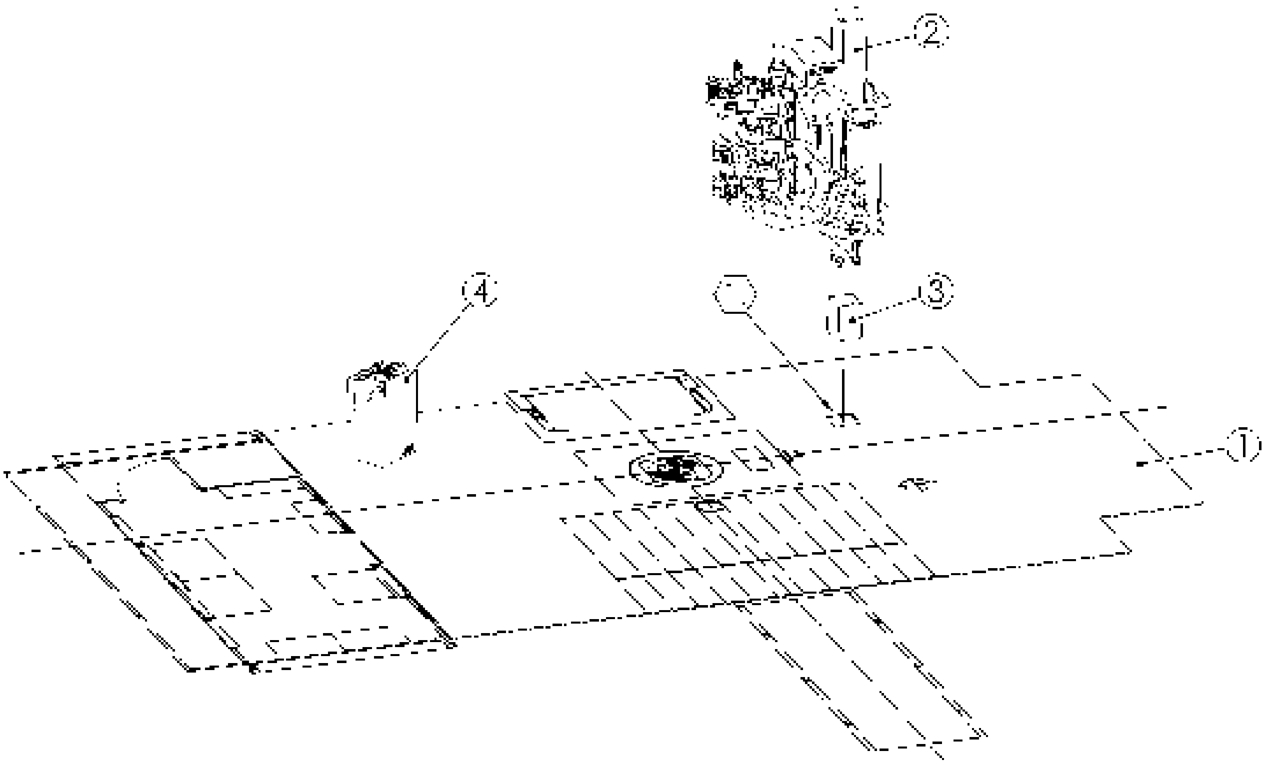
## T-WREX is a pedestal mounted wrench/spinner combination tool for making up and breaking out threaded tubulars on drilling rigs.

**A fully operational T-WREX consists of the following assemblies:**
*Transportation pallet
*Pedestal, complete unit
*Controls, complete with remote console, and control lines to tool
*All documentation

**OPTIONAL:**
*Floor socket/recieving tube (PN 51201), cut to 16” in length.



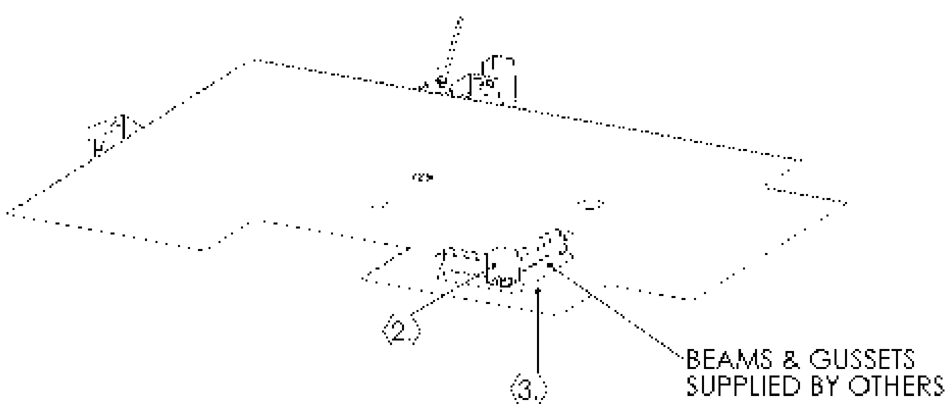

| MODEL | M |
|---|---|
| T-WREX JR. | 494,599 N./LBS. |
| T-WREX SR. | 627,984 N./LBS. |




| | | |
|---|---|---|
| 4 REF. | T-WREX CONTROL CONSOLE | 1 |
| 3 | 51201 FLOOR SOCKET | 1 |
| 2 REF. | T-WREX JR./SR. | 1 |
| 1 REF. | RIG FLOOR EXAMPLE | 1 |
| ITEM NO. | DESCRIPTION | QTY. |

NOTES:

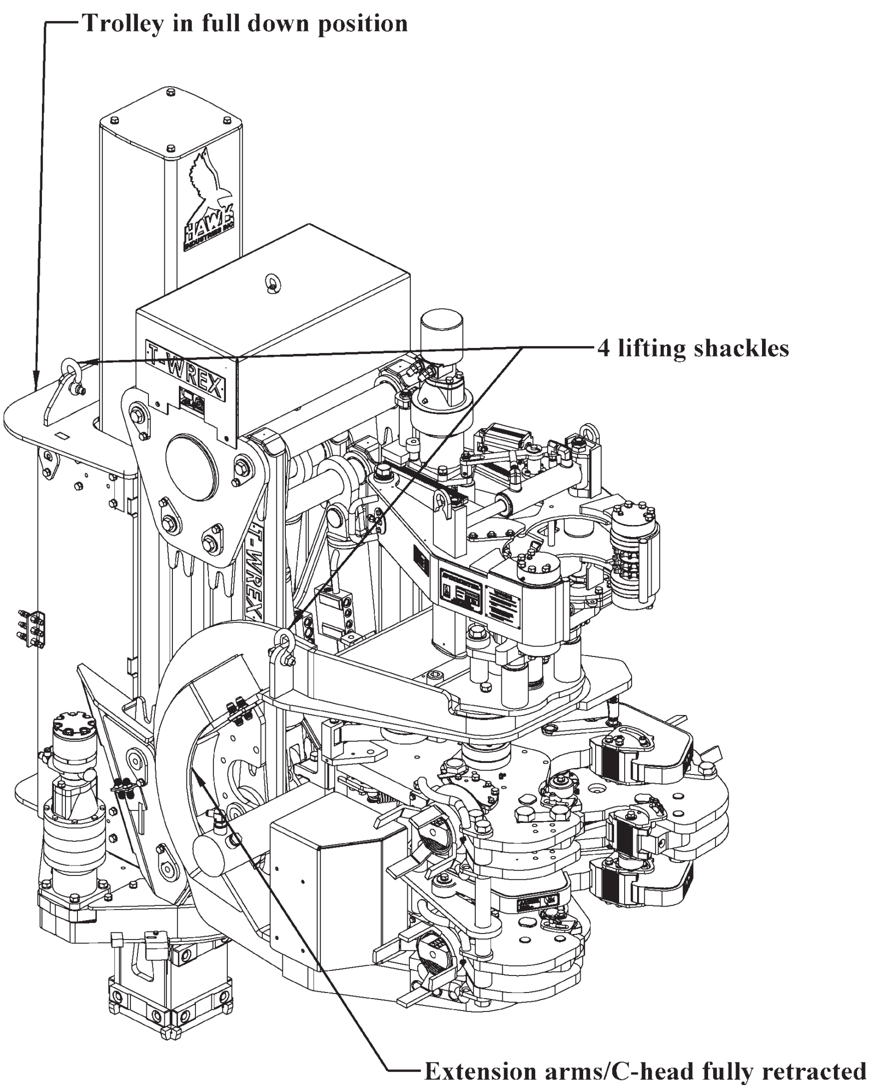
1. 12 1/8" X 12 1/8" SQUARE CLEARANCE HOLE IN FLOOR PLATE IN PRE-DETERMINED POSITION.
2. 51201 FLOOR SOCKET INSTALLED FLUSH WITH TOP OF FLOOR PLATE AND TWO ADJACENT SIDES PERPENDICULAR TO FLOOR.
3. DEPENDING ON LOCATION OF BEAMS UNDER FLOOR PLATE, FLOOR SOCKET SHALL BE ADEQUATELY BOXED IN USING SUITABLE BEAM MATERIAL OR GUSSETED AS REQUIRED.



# Lifting the T-WREX

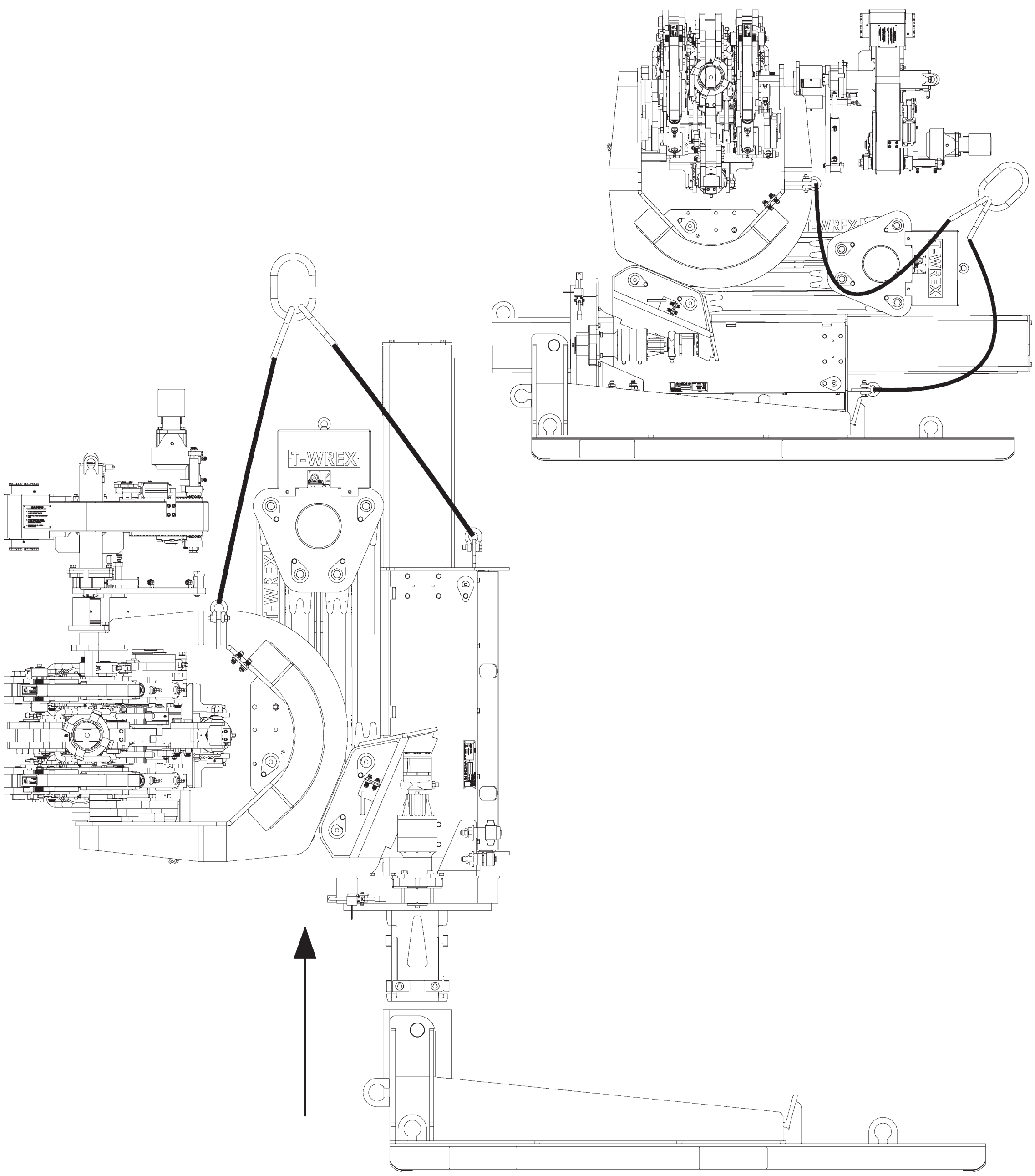
Before lifting the T-Wrex, verify that the trolley is in the full down position and the extending arms are fully retracted. Use the four lifting shackles attached to lugs on top of the C-Head and Trolley with lifting sling assembly  (Sr. sling PN 51702, Jr. sling PN 51202).

**Always use the lifting lugs and shackles provided. Nothing else is rated for, nor intended to support the full weight of the T-Wrex.*



# Transporting the T-WREX

Whenever transporting the T-Wrex, make sure the unit is supported in a stable manner. Attach tie-down straps to the four provided lifting shackles attached to the lugs of the C-Head and Trolley to the transportation pallet (pallet PN 51550) lugs.



# 51886 Control System Elements

The T-WREX controls are face mounted on a remotely located console.

Each lever/button introduces compressed air into different sections of the pneumatic control system.

A misrouted air line can cause the tool to operate in a manner not intended by the operator.

There are air operated elements in the control system that will route, close off, or vent air signals to pilot the hydraulic valves.
*These elements are located under the control console panel, in the relay box, and up on top of the extending center pivot -- under a large box-shaped cover (four bolts).*

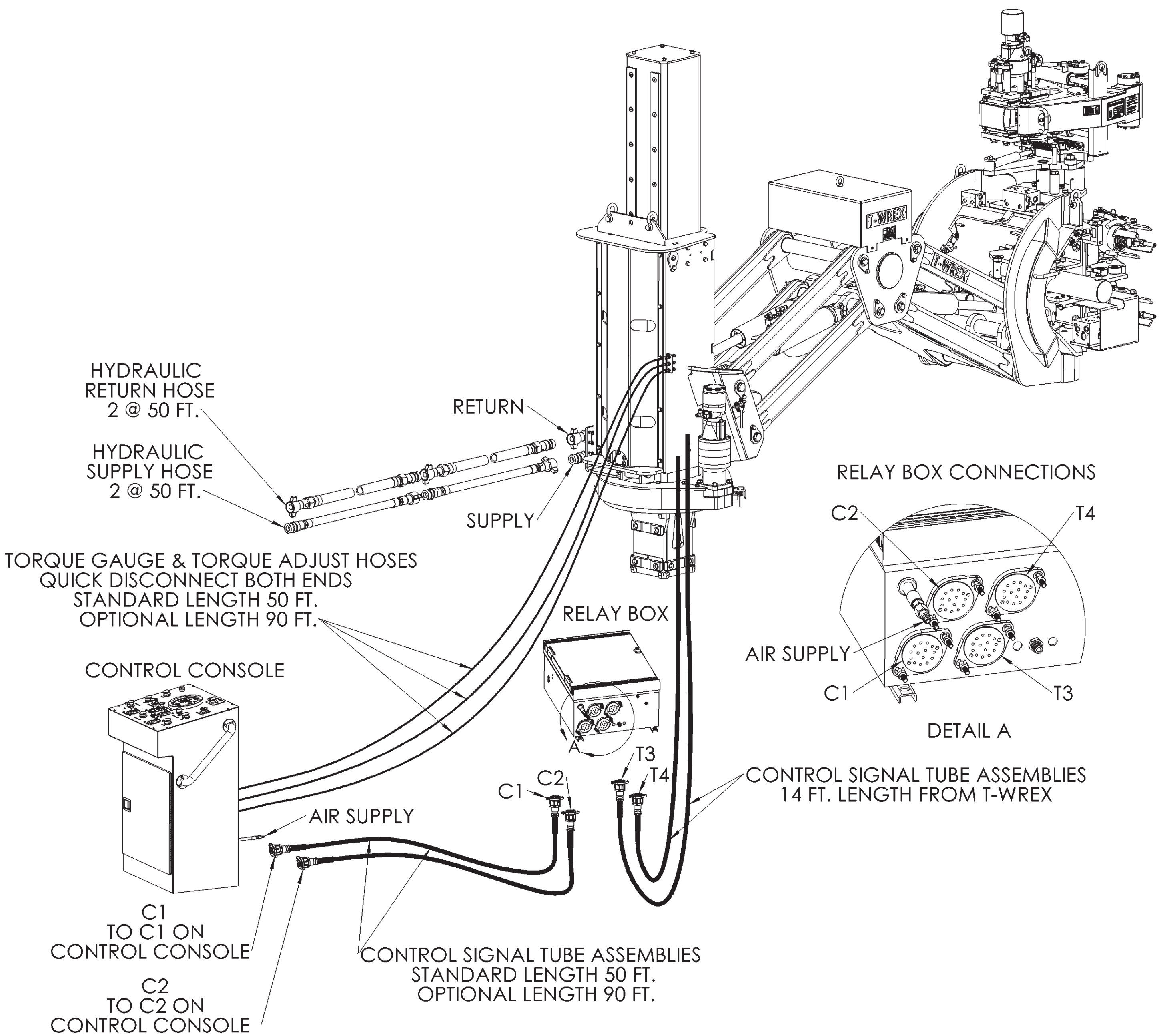
There are **two basic logic element types** in T-WREX's control system, with the more complicated circuits being of varying configurations of logic elements combined.

The '**OR**' element (PN L15): it has two inputs and one output. Described easily: a three port "Y" with no crosstalk between the two input ports. Crosstalk is the energizing of an input port from another input port.

The other element is the **air piloted valve** (PN A501, or PN A508).
It has one pilot (spring return) or two pilot ports (pilot return), one air supply port, two output ports, and two venting exhaust ports.
These valves have an internal spool shifted by at least one pilot signal (compressed air).
The input (supply air) is routed by the position of the internal spool to one output port only.
The input port on this valve is located between the two exhaust ports. The two output ports are on opposite face.

The other pneumatic elements whithin the control system are relays, logical NOT, and mechanical input valves (rotation and extend limits, set by operator).

# 51200/51700 General Arrangement



# 51507 Control Console

**EMERGENCY STOP (detented):** De-energize pneumatic control system

**MAKE/BREAK MODE (selector):** Toggle tool operation
*Operator must properly align the two working wrenches to box/pin shoulder line with the **HEIGHT** control lever.*
*On **make**: align between **bottom** and **middle** wrenches*
*On **break**: align between **top** and **middle** wrenches*

**ROTATE (lever):** Rotate entire unit about pedestal
**ROTATE (button):** Bypass rotate sensors when rotating, **OR** speed up unit when retracting
**EXTEND (lever):** Extend wrench and spinner units to target

**FINAL ADJUST (momentary):**
Jog unit in extend (forward), short distance (pneumatic timer)
Used to obtain **correct bite**. Also used to **bypass extend stops** when extending.

**HEIGHT (lever):** Align wrenches to target for proper operation. Trolley lift/lower.
**TILT (lever):** Align spinner and wrench head parallel to drill string.

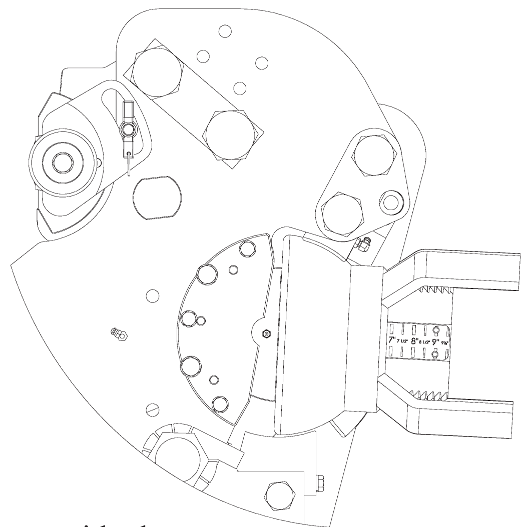
**GRIP (detented, wrench nuts must be set to target size):** Grip target with back-up wrench
**SPIN (momentary, spinner must be set to target size with *SPINNER ADJUST*):**
Spin in new connection, or spin out an untorqued connection.
**CHAIN OILER (momentary):** Lubricate spinner chain, only during spinning operation
**TORQUE (momentary):** Grip target with torqing wrench and extend torque cylinder

***SPINNER ADJUST (selector)***
**UNCLAMP:** Unclamp motor assembly from spinner case, air cylinder pulls motor forward
**ADJUST:** Air cylinder pushes spinner motor back putting tension on chain
**CLAMP:** Clamps motor assembly to spinner case, must be clamped for spinning operation

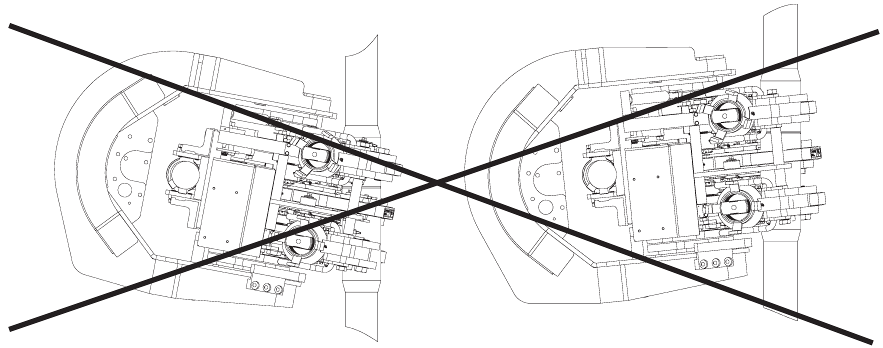
**TORQUE ADJUST (knob, pilot valve):** Adjust wrench output torque. To be set after initial spin and torque. Final reading read at begining of torque cylinder stroke while torqing. Rotate adjustment knob in for more torque, out for less.

**TORQUE GAUGE (torque arm calibrated gage):** Torque indicator, displayed in FT/LBS. Read at begining of torque cylinder stroke while torquing.

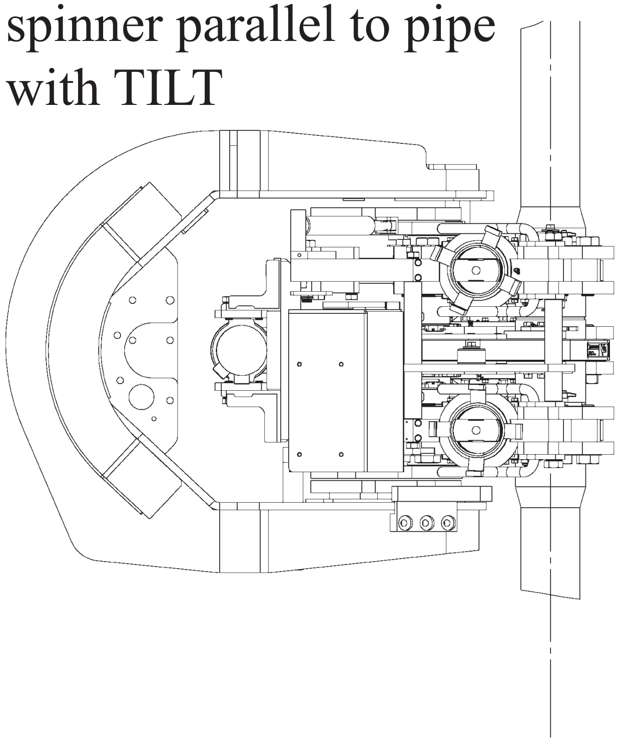
# Setup Wrenches



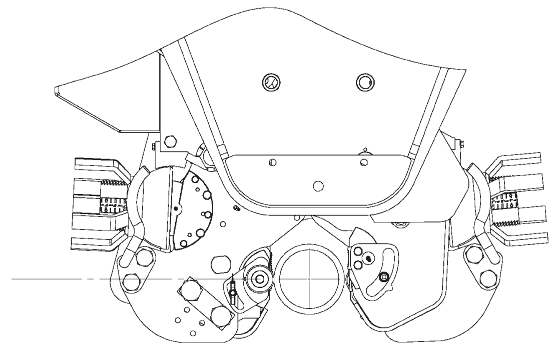
**To set wrenches:**
Scale on wrench refers to target O.D.
Scale is read looking straight down, reading graduation just outside the nut.
Check die retaining plate pointers after griping for correct indication, extend/final adjust/retract/tilt as neccessary.



Align wrenches and spinner parallel to pipe with TILT

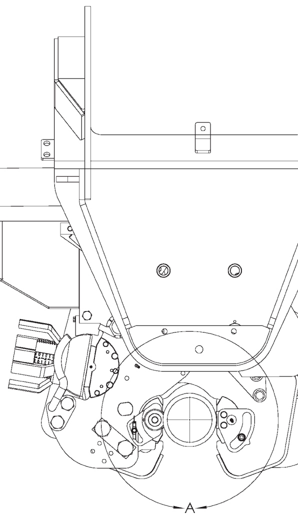


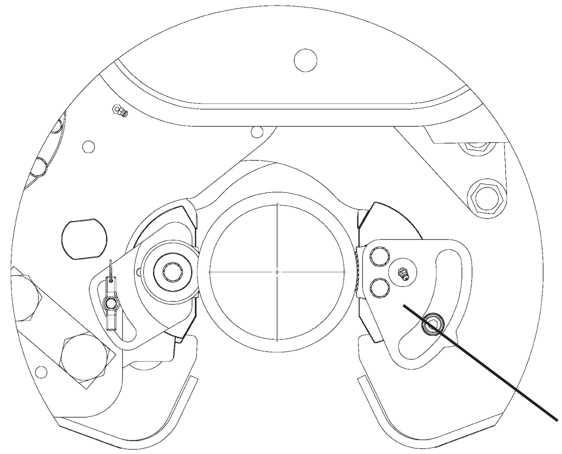
Extend until heel side die holder **bolt head** is centered over pipe



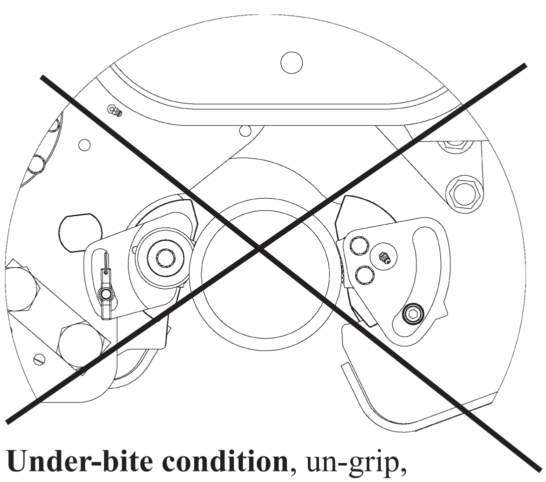
# Setup Wrenches

**Once lined up,
hit the grip button and take a reading**

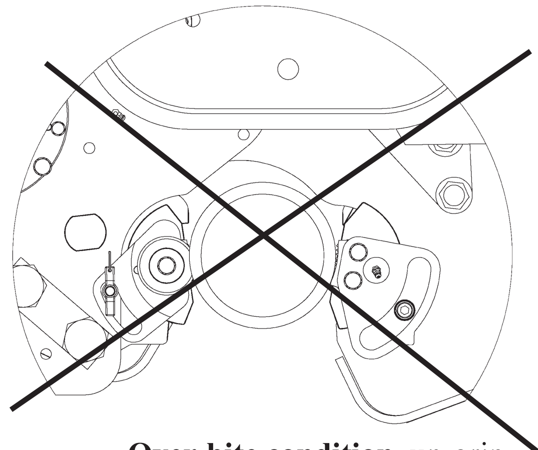




**A good bite,
pointer on die holder retainer plate
lines up with bolt head**



**Under-bite condition**, un-grip,
check wrench nuts, rotate nut out for more bite
OR if heel side is NOT lined up to pipe center
use FINAL ADJUST button (momentary)

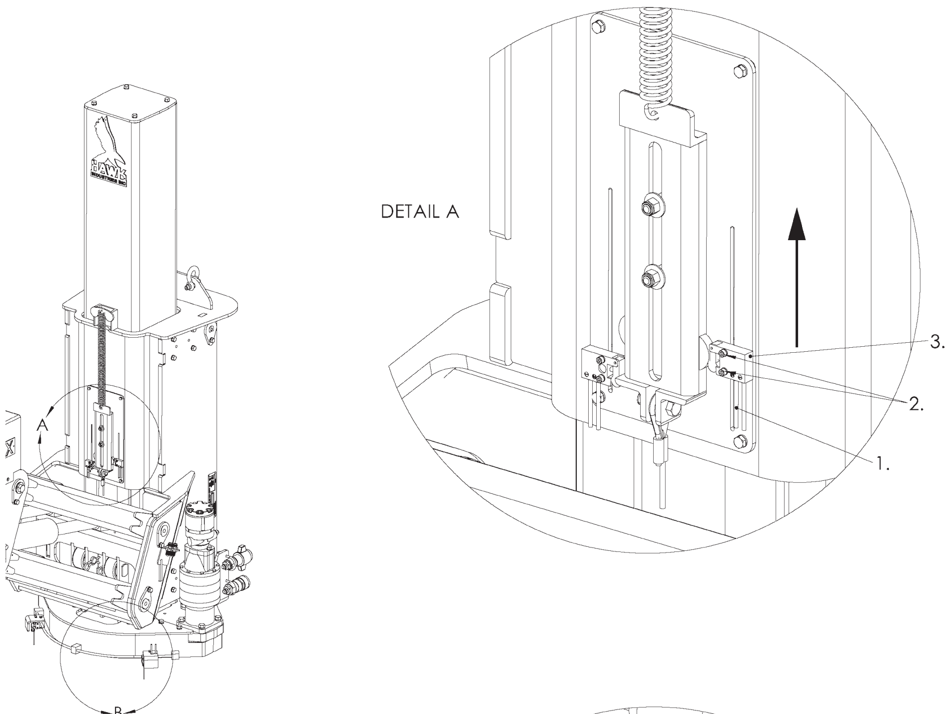


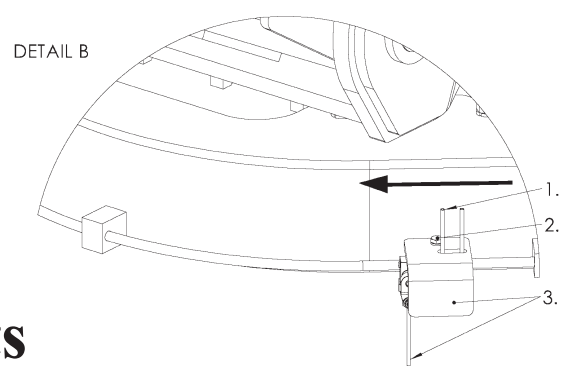
**Over-bite condition**, un-grip,
check wrench nuts, rotate nut in for less bite
OR if heel side is not lined up to pipe center
use RETRACT LEVER,
then FINAL ADJUST button (momentary)

# 51200/51700 Setup Limits

# Extend Limits

Two adjustable extend limits disable EXTEND function when one is triggered.
These are set to **well and mouse hole centers**. Pressing the FINAL  ADJUST button while extending will bypass these limits.




# Rotate Limits

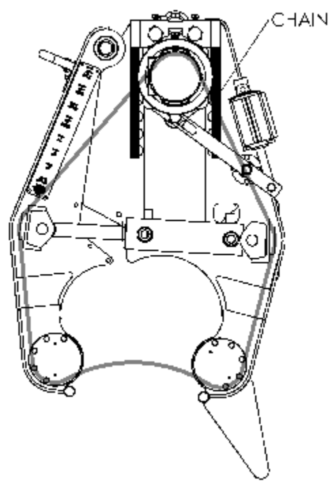
Two adjustable rotation limits disable ROTATE function when one is triggered.
These are set to **well and mouse hole centers**. Pressing the ROTATE button while rotating will bypass these limits.

# 950TWA Spinner Adjust

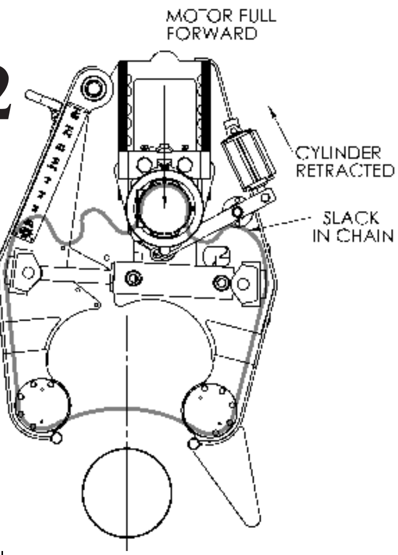
*WRENCHES MUST BE SET PRIOR TO SPIN OPERATION*

**To adjust spinner:**
**1**.) Retract unit off target.
**2**.) Place *SPINNER ADJUST* to **UNCLAMP**
**3**.) Extend unit until target is nested into spinner.
  **a**.) Place *SPINNER ADJUST* to **ADJUST**
  **b**.) Place *SPINNER ADJUST* to **CLAMP**
*SPINNER IS NOW SET*
**4.) GRIP and SPIN**

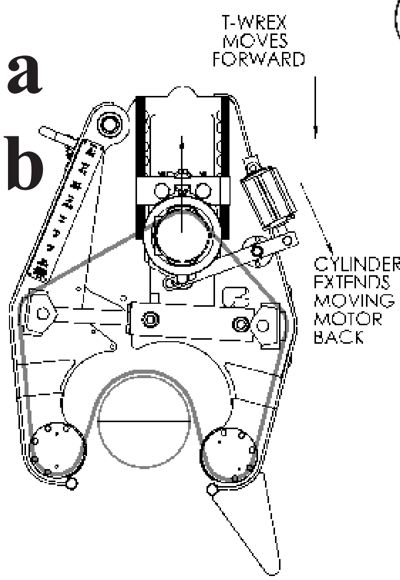
1



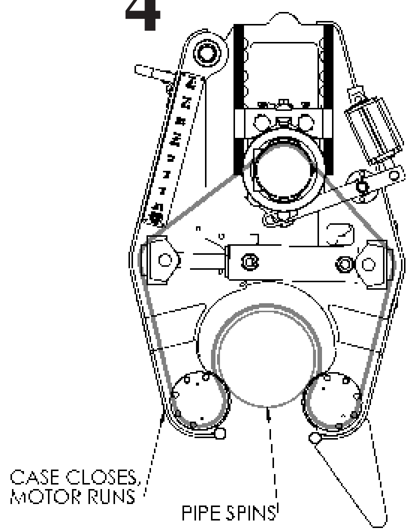

2




3a
3b




4

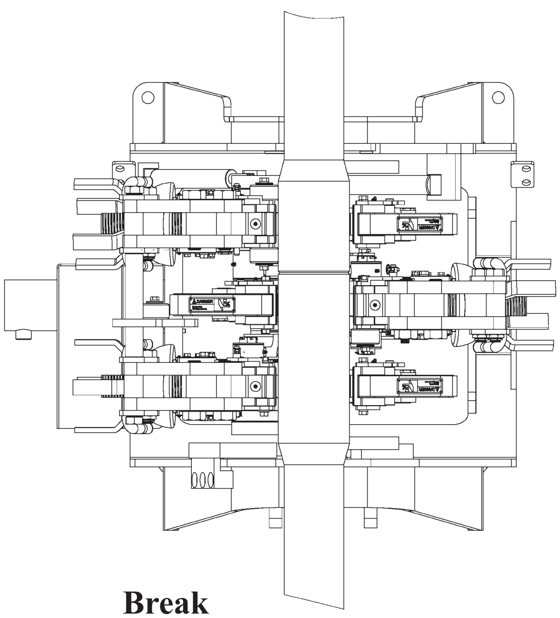


# Operating Modes

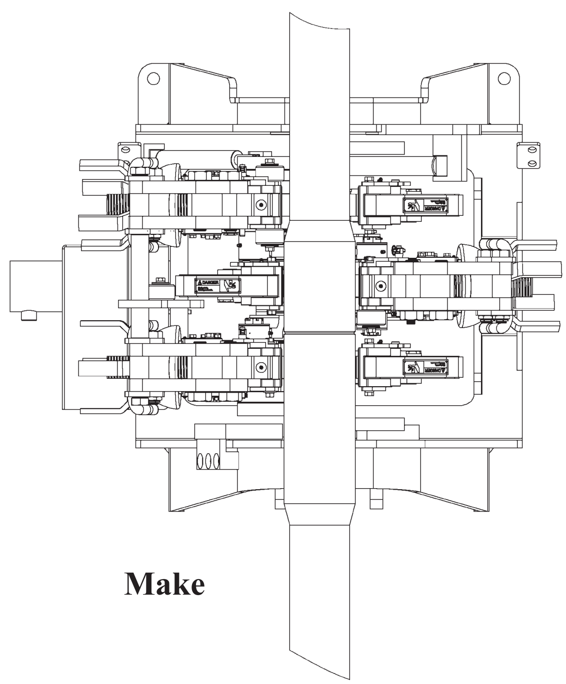
T-WREX utilizes a three wrench system for making up and breaking out threaded tubulars. Only two of the three wrenches will operate in either make or break mode.

**Make: This mode sets the tool to make up new connections.**
In this mode, the bottom wrench backs up the middle torquing wrench. Enabling the grip button (detented) in this mode will grip **bottom** as back-up wrench. Pushing the torque button (momentary) will sequence **middle** wrench grip and torque operation.

**Break: This mode sets the tool to break out made connections.**
In this mode, the middle wrench backs up the top torquing wrench. Enabling the grip button(detented) in this mode will grip **middle** as back-up wrench. Pushing the torque button(momentary) will sequence **top** wrench grip and torque operation.



**Break**



**Make**

**Required wrench position relative to tool joint line for make or break mode.**

# Control Sequence

## Basic Operation:

**1. Set wrenches (pages 75-76)**
**2. Set spinner (page 78)**
**3. Set a rotate and an extend limit (page 77)**
**4. Height adjust for make or break (refer to previous page)**
**5. Hit GRIP**
**6.**

**For Make:**

**hit SPIN until shouldered, release**
**hit TORQUE until torqued, release**
**UN-GRIP**

**For Break:**

**hit TORQUE until joint is broken, release**
**hit SPIN until done, release**
**UN-GRIP**

**7. Retract unit off target, continue drilling operation**

# Routine Maintenance

## Maintain:

**Wrenches**:

- **Grease wrench nut threads**
- **Check dies for wear, replace if slipping**

**Spinner**:

- **Check chain for wear**
- **Hit OILER button for 3-5 seconds every third or fourth spin**

## Grease:

- **Zerk fittings in and around:**
  - **Spinner**
  - **Wrench head**
- **Main rotation bearing assembly (PN 51220)**

## Check:

- **Hydraulic oil level in power unit (PN 51640)**
- **Air filter indicator, replace filter if indicator is red**
- **Hydrualic oil filter indicator, replace filter if indicator is red**

Equipment must be maintained on a routine basis.
**Failure to conduct routine maintenance could result in equipment damage or injury to personnel.*

# Proper Use of Equipment

Hawk equipment is designed for specific functions and applications, and should be used only for its intended purpose.

## HAWK INDUSTRIES, INC.

### T-WREX® RECOMMENDED MAINTENANCE CHECKLIST

| T-WREX S/N: | Rig Name: | Maintenance Check Date: |
|---|---|---|
| | Pipe Size: | |

A TICK SHOWN IN THE CLEAR CELLS, WILL INDICATE THE ITEM WAS FOUND TO BE ACCEPTABLE

| PLACE A TICK IN THE APPROPRIATE BOX ON THE RIGHT | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|---|
| Overall Visual Inspection | | | | | | | |
| CHECK THAT EMERGENCY STOP BUTTONS ARE OPERATIONAL | | | | | | | |
| Check all cables for broken strands | | | | | | | |
| Check that die holders are greased and swiveling | | | | | | | |
| Check level of Middle Wrench for bearing wear | | | | | | | |
| Check for wear and grease dies | | | | | | | |
| Check for Hydraulic plumbing leaks | | | | | | | |
| Check spinner chain and grease (spray) | | | | | | | |
| Check Low Torque warning system | | | | | | | |
| Check Torque readings | | | | | | | |
| Activate & grease all wrench adjustment nuts | | | | | | | |
| Check & grease pivot pins behind adjustment nuts | | | | | | | |
| Check Hydraulic filter (Red button IN) | | | | | | | |
| Check angle brackets | | | | | | | |
| Check all Grip Cyl mount bolts | | | | | | | |
| Check all linkage mount pins/bolts | | | | | | | |
| Check hoses on spinner assy | | | | | | | |
| Check die rollers & holders for position + tightness | | | | | | | |
| Apply grease to all grease fittings & check it in place | | | | | | | |
| Check quick release pins on die holders | | | | | | | |
| Check wear grooves on spinner rollers | | | | | | | |
| PERFORM FUNCTION TEST | | | | | | | |
| Check spinner reducer bearing | | | | | | | |
| Check level of spinner | | | | | | | |
| Check spinner gearbox oil level | | | | | | | |
| Drain water separator in air system | | | | | | | |
| Check tightness of all bolts & castle nuts | | | | | | | |
| Check all castle nuts for cotter pins | | | | | | | |
| Clean air filter dryers | | | | | | | |
| Check grip pressure (1000psi) | | | | | | | |
| Rotate Hooks | | | | | | | |
| Check welds on all Jaw Plates | | | | | | | |
| Change Spinner Reducer Oil (10W) | | | | | | | |
| Magnetic Particle Inspect All Hook Threads (ea/ed 12 mos) EXP DATE: | | | | | | | |
| Remove & clean oil end caps on BOSCH valves | | | | | | | |
| Torque Gauge Calibration/Next Calib. Date: ________ S/N: ____________ | | | | | | | |
| | | | | | | | |

Maintenance Inspection by: ____________________ Workshop Supervisor's approval: ____________________